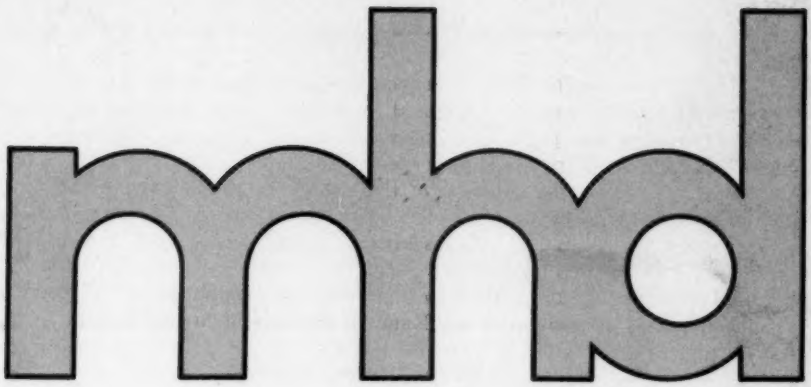
mental health digest

Volume 5, Number 5, May 1973



1 Recent Research Findings

2 Schizophrenic Pathology in Young Adults: A Clinical Study
by Roy R. Grinker, Sr. and Philip S. Holzman

8 Provocation of Schizophrenic Symptoms by Intravenous Administration of Methylphenidate
by David S. Janowsky, M. Khaled El-Yousef, John M. Davis, and H. Joseph Sekerke

11 Reduced Monoamine Oxidase Activity in Platelets: A Possible Genetic Marker for Vulnerability to Schizophrenia
by R. J. Wyatt, D. L. Murphy, R. Belmaker, S. Cohen, C. H. Donnelly, and W. Pollin

12 Drug and Sociotherapy in the Aftercare of Schizophrenic Patients: One-Year Relapse Rates
by Gerard E. Hogarty, Solomon C. Goldberg, and the Collaborative Study Group

17 Response to Triiodothyronine and Dextroamphetamine: A Study of Preschool Schizophrenic Children
by Magda Campbell, Barbara Fish, Raphael David, Theodore Shapiro, Patrick Collins, and Celedonia Koh

20 Perception in Chess
by William G. Chase and Herbert A. Simon

28 Hypothalamic and Midbrain Neural Pathways Involved in Eating, Drinking, Irritability, Aggression and Copulation in Rats
by George Paxinos and Dalbir Bindra

32 The Use of Modeling to Increase Independent Behavior
by Arnold P. Goldstein, Jan Martens, Jo Hubben, Harry A. van Belle, Wim Schaaf, Hans Wiersma, and Arnold Goedhart

35 Simulated Public Speaking and Anxiety
by Steven Lipper and Douglas M. McNair

37 Relaxation Training Facilitated by Biofeedback Apparatus as a Supplemental Treatment in Bronchial Asthma
by Margaret H. Davis, David R. Saunders, Thomas L. Creer, and Hyman Chai

40 After Ten Years: A Follow-up Study of Comprehensive Vocationally Oriented Psychotherapy
by Milton F. Shore and Joseph L. Massimo

41 Psychiatric Assessment of 30 Chronic Users of Cannabis and 30 Matched Controls
by Michael H. Beaubrun and Frank Knight

43 Individualized Behavior Therapy for Alcoholics
by Mark B. Sobell and Linda C. Sobell

48 Factors Influencing the Success of Applied Research
by Edward M. Glaser and Samuel H. Taylor

52 Mental Health and the Law
An Examination of the Civil Rights of Mentally Ill Children
by Leon H. Ginsberg

58 Mental Health News Digests

The *Mental Health Digest* is a monthly publication designed to reflect the whole spectrum of mental health and to present a broad sampling of scientific subject matter and professional points of view. It contains condensations of material selected from the current mental health literature. The condensations are published with the approval of the authors and publishers for use in the *Mental Health Digest* only. Readers interested in particular digests are urged to consult the journal or other source in which the material first appeared or to ask the authors for reprints.

Material contained in the *Digest* does not necessarily reflect the opinions, official policy, or position of the National Institute of Mental Health.

Editorial Advisory Board

Bertram S. Brown, M.D., Chairman

William E. Bunney, M.D.
Harry P. Cain II, Ph.D.
Morris E. Chafetz, M.D.
Robert A. Cohen, M.D., Ph.D.
John C. Eberhart, Ph.D.
James A. Goodman, Ph.D.
James D. Isbister
Thomas F. A. Plaut, Ph.D.
Luther D. Robinson, M.D.
Gian C. Salmoiraghi, M.D., Ph.D.
Claudewell S. Thomas, M.D.
Francis N. Waldrop, M.D.
Louis A. Wienckowski, Ph.D.

Editor: Lorraine Bouthilet, Ph.D.

to subscribe

The *Mental Health Digest* is available on subscription from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Subscription price: $6.50 a year; Single copy: 55¢. For foreign mailing, add $1.75. (No additional postage is required for Canada, Mexico, and Central and South American countries except Argentina, Brazil, British Honduras, French Guiana, Guyana, and Surinam.) Please make check or money order payable to the Superintendent of Documents. An annual subscription runs for 12 consecutive issues and begins when orders are processed. However, a subscription may be backdated to include issues already published in the current volume when the issues are available. Issues for back years, when available, are sold at the single copy price. The expiration date is printed on the top line of the address label. Change of address and complaints about nonreceipt of issues should be sent to the Superintendent of Documents, and should include the old address, preferably a mailing label, as well as the new address.

Use of funds for printing this publication approved by the Director of the Bureau of the Budget, May 20, 1968.

NIMH: BACK TO NIH

The National Institute of Mental Health is returning to the National Institutes of Health, according to an announcement on May 4, 1973 of a major health reorganization within the Department of Health, Education, and Welfare.

The announcement spells the end of the Health Services and Mental Health Administration which was created in 1968.

"We are pleased the Institute will remain intact," said Dr. Bertram S. Brown, Institute Director. "Our return to NIH poses no problems for us since we were part of that organization from our beginnings in 1948 until we became a Public Health Service Bureau in 1967."

He said there have been no official discussions in terms of a possible physical relocation of Institute staff. It will be some time before any decisions are made regarding such a move.

"The move was predicted," Dr. Brown said of the reorganization announcement. "It has, as all employees of the Institute know, been rumored for some weeks now.

"I am sure that the feeling of our staff is one of relief to have the days of uncertainty come to an end. It means that we can now concentrate on returning our thoughts to important Institute activities and to making the return to NIH as uncomplicated as possible."

NIMH was designated an independent Bureau of the Public Health Service after 18 years as a part of the National Institutes of Health. This action brought under NIMH jurisdiction both the Fort Worth and Lexington addiction hospitals.

During the 1960s administrative personnel of the Institute were physically relocated from the NIH campus to the Barlow Building in Chevy Chase and then to the Parklawn Building in June 1971. Intramural research personnel have remained on the NIH campus and at Saint Elizabeths Hospital.

HEW NEWS RELEASE ON CHANGES IN HEALTH SETUP

HEW Secretary Caspar W. Weinberger today (May 4) announced a major reorganization of health activities to sharpen the Department's focus on biomedical research, health service delivery, health resource development and consumer protection.

Harold O. Buzzell, 40, former Deputy Manpower Administrator of the Department of Labor, was named by the Secretary to implement the proposed administrative reorganization under Assistant Secretary for Health Dr. Edwards, and then take over as Director of the Health Services Administration, one of the five health agencies.

"I am confident that this restructuring of the agencies reporting to Dr. Edwards will increase the efficiency and effectiveness of the Department's health program and facilitate the development of sound policy in this area of our responsibility," the Secretary said.

HEW presently contains three health agencies: The National Institutes of Health, which supports biomedical research and training of health manpower; the Health Services and Mental Health Administration, which contains major health services development and delivery programs; and the Food and Drug Administration, which is under the Department's major consumer protection arm.

Under the reorganization, there will be five Department health agencies: The Food and Drug Administration remains unchanged. A new Health Services Administration will contain the health service grant and direct delivery programs. A new Health Resources Administration will contain the health service data gathering and surveillance activities and health service demonstration programs. The Bureau of Health Manpower Education will be transferred to this new agency from NIH.

The Center for Disease Control, headquartered in Atlanta, Ga., will remain essentially as it is, with the addition of the National Institute of Occupational Safety and Health under its direction.

The National Institutes of Health--which loses the Bureau of Health Manpower Education--will gain the National Institute of Mental Health, formerly part of the Health Services and Mental Health Administration.

In effect under the Secretary's proposed reorganization, the Health Services and Mental Health Administra-

tion will be split into three separate agencies--the new Health Resources Administration, the Health Services Administration, and the Center for Disease Control.

Directors of the newly proposed agencies have not yet been named.

Under the reorganization, which follows recommendations made to the Secretary by Dr. Edwards, the five agencies would constitute the new makeup of the overall Public Health Service.

Secretary Weinberger said the Department's new health structure would become effective as soon as Dr. Edwards can implement the reorganization proposals.

He said the changes would be carried out "with minimum disruption of personnel in physical location of all agencies involved."

Secretary Weinberger also directed Robert H. Marik, Assistant Secretary for Administration and Management, to work with Dr. Edwards and with James Dwight, Acting Administrator of the Social and Rehabilitation Service, and Arthur Hess, Acting Commissioner of Social Security "to examine ways to strengthen the policy role of the Assistant Secretary for Health in the Medicaid and Medicare programs."

Any further reorganization resulting from this examination will be announced later.

STATEMENT BY DR. BERTRAM S. BROWN
DIRECTOR, NATIONAL INSTITUTE OF MENTAL HEALTH

The rumors of the past few weeks are now news. We are going to NIH. The National Institutes of Health has another proud Institute in its ranks again.

The NIMH family remains intact--although the organizational location of alcohol and drugs is subject to review--and our mission is as clear as ever. The announcement of our latest organizational shift means that we can now concentrate our thoughts and efforts to important Institute activities.

I pledge to make the return to NIH as uncomplicated as possible, but I must ask for the wholehearted cooperation of the entire staff who have always rallied in the past and and made each reorganization a stepping stone to continued progress.

Dr. Charles Edwards has assured us that the research,

services, and training components of the Institute will remain together in our program to improve the mental health of the people of the U.S. Mr. Harold Buzzell, the new Administrator of the Health Services Administration, will head the planning effort for the internal reorganization that was announced last week. Dr. Edwards indicated that the changes will probably occur during the next couple of months but will take as long as necessary to assure effectiveness and a smooth transition. Working with Mr. Buzzell will be a group of internal staff members. Some of us may be asked to help; if you are asked, I urge your full cooperation and support.

As details become available, we will pass them along to staff. Headquarters will remain at Parklawn until much more planning is complete. It will be some time before any decisions will be made regarding a physical relocation.

The organizational change is not accompanied by any new requirements for personnel reductions.

It won't exactly be business as usual because we will have to shift several gears into the NIH operating procedures, but we will be together, working hard on our usual business. As Director of NIMH, I look forward to working with all of you for many years.

STATEMENT BY DR. JOHN SHERMAN
ACTING DIRECTOR, NATIONAL INSTITUTES OF HEALTH

The return of the National Institute of Mental Health to the National Institutes of Health is a welcome and challenging development. While the NIMH has been apart from us since 1967, the fact is that from the research standpoint we have remained related institutions. Our scientists--as you know, the NIMH intramural research program has remained on the reservation--have worked very closely and effectively together during those years. And our administrative personnel have often sought the same goals in the area of health improvement.

Having NIMH rejoin forces with the National Institutes of Health is also pleasing to all of us in the personal sense. We have the highest regard and admiration for Bert Brown and his staff. It is a source of great satisfaction that we can continue to pursue together the great work that has proved so valuable to the health of the American people.

Recent Research Findings

On schizophrenia . . .

- A study of all 105 patients strongly suggests that characteristic of all the schizophrenics is a pervasive difficulty in maintaining organizational coherence.
- For the actively ill schizophrenic patients [after methylphenidate infusion] there was a significant, dramatic intensification of preexisting psychotic symptoms such as hallucinations, delusions, inappropriate affect, and catatonic posturing.
- MAO activity of schizophrenic twins was significantly lower than that of the 23 normals.
- The effect of drugs in reducing relapse can only be characterized as huge.
- Generally, triiodothyronine caused many symptoms to decrease and the improvements were often marked in both the psychotic and nonpsychotic children.

And on perception and memory in chess, neural pathways of motivation, modeling to teach independence, anxiety and public speaking, biofeedback training in bronchial asthma, vocationally oriented psychotherapy, effects of chronic cannabis use, behavior therapy for alcoholics, and how to improve dissemination and utilization of research findings . . .

- The data on chunk size and memory span confirm the hypotheses that chunk size is larger for more skilled chess players, and that the number of chunks is within the memory span.
- It appears that some medial hypothalamic nuclei are critically involved in the control of eating, irritability, and copulation.
- Patients in each of the three experimental conditions increased in independence significantly more than no instruction-no control patients.
- It appears that simulated public speaking does induce anxiety in normal subjects.
- The finding that relaxation training, especially when facilitated by biofeedback, is more effective with those suffering from mild asthma than with those having severe asthma has important implications for those who may be contemplating the use of these procedures in the management of asthma.
- The most significant finding over this 10-year followup of vocationally oriented psychotherapy is the minimal change in direction of overall adjustment in either group over the decade.
- [After chronic cannabis use] no significant abnormalities emerged from the mental status examinations.
- Alcoholics treated by a method of individualized behavior therapy were found to function significantly better after discharge than alcoholics treated by conventional techniques.
- Funding organizations might consider trial programs wherein information dissemination consultants are made available to projects from their inception to determine if this brings about improved outcomes as well as better diffusion and utilization results.

For details, see the condensations in this issue of the *Digest*.

Schizophrenic Pathology in Young Adults: A Clinical Study

Roy R. Grinker, Sr. and Philip S. Holzman

Ever since Morel's treatise on dementia praecox, research efforts have focused on defining the essence of the kinds of madness we call the schizophrenias. In an essay on this topic, one of us formulated 12 questions which probed the issues of essence and asked what basic factors are at least knowable about schizophrenic people. The questions encompassed biogenetic, epidemiological, familial, psychological, biochemical, and sociological evidence. A behavioral outcome like schizophrenia cannot be explained by a single causal entity. The complexity of schizophrenic phenomena, the changing manifestations of the process within a single person, the individual differences in appearance and course, and the influence of social factors on the course of the process all argue for strategies of study that reflect a confrontation with a system of interrelated and mutually transacting components.

We must develop a new research strategy when we further consider that the schizophrenias we are most familiar with—the hospitalized patients in acute or chronic phase with or without paranoid symptoms—are not the only variations of the schizophrenias, nor are they the most frequent. Nonpsychotic forms of schizophrenia may claim a wider prevalence than do the familiar psychotic forms.

One must take seriously the protean manifestations of schizophrenia. To restrict research on schizophrenia to the hospitalized acute and chronic psychotic forms of the disorder may divert our attention to dysfunction which is correlated with severity or with deterioration and away from the essence of the schizophrenic syndrome. For these reasons the research enterprise we have undertaken focuses on a range of schizophrenia. The studies, in cooperation and collaboration with a number of investigators, are a loose federation, guided only by the theoretical orientation that emphasizes the systems approach, and by the multiple and overlapping studies on the *same groups of patients*. In this paper we describe one group of patients not usually studied in research on schizophrenia: young adults from middle and upper socioeconomic groups, hospitalized for what appeared to be an acute psychotic episode. We will describe only the psychological characteristics of this group of patients exposed during interviews.

Rationale for a Program of Research

We have observed that investigators approaching the problem of schizophrenia with nonclinical techniques have not clearly defined the subject they were studying. The question "What is schizophrenia?" has not been answered. Any program of research on schizophrenia should reach a working phenomenological definition of the category as a whole and its subgroups in process terms leaving psychodynamic speculations aside for later. We emphasize that when we use the term schizophrenia we do not necessarily mean psychosis, which is a behavioral term, applicable as well to other conditions such as toxicities, infections, traumas, and organic brain syndromes. We include the nonpsychotic manifestations of the schizophrenias, that is, the so-called latent, pre-, incipient, ambulatory, and remitted schizophrenics, as well as those who have been called schizophrenic characters.

We assume that schizophrenia is a

polyvalent outcome of a number of variables which comprise a system or organization that represents a form of functional adaptation. The form is stable only in some degree as an end product, since schizophrenic individuals show a high degree of variability over time and the forms of schizophrenias differ between individuals.

Sufficient evidence is available to determine that the dysfunctions in the schizophrenias implicate biological, psychological, and environmental realms. We assume that a diathesis-stress model conforms to the data as we have known them: Life challenges ranging from serious illnesses or structural anomalies in infancy to narcissistic injuries are necessary to precipitate a predisposed (schizotaxic) individual into an overt schizophrenia and possibly eventually into a psychosis, given the proper environmental field.

Our program is oriented toward attempting to find answers to the *what* (definition of types), the *how* (etiologies), and the *why* (adaptive meaning) of the schizophrenias. The basic principle is that a large sample of schizophrenics, constituting a range of symptom pictures, "normal" controls, and other nonschizophrenic psychopathological persons will be available for the same tests over time, to be studied during remissions, in a clinic or halfway house attendance, or when readmitted to a hospital.

Patients and Procedures

A group of 105 patients, between the ages of 17 and 24, have been hospitalized for a variety of reasons. All were white and in socioeconomic classes 1, 2, and 3 as determined by the Hollingshead Two-Factor Index of Social Position. We report the clinical findings of these patients because they describe variations in the appearance of schizophrenic pathology within a group of young adults. That these people have come to a hospital where the patients predominantly belong to high socioeconomic classes makes them interesting for study, for much about schizophrenia is based upon examinations of lower socioeconomic status patients.

The diagnostic data were collected by a semistructured clinical interview conducted with each patient by one of us. The interview was tape-recorded. Without prior knowledge of the patient's history or diagnosis, the interviewer received each patient in his office after the patient had agreed to be interviewed and was sufficiently organized and in touch with reality to remain cooperative during the interview. The topics discussed during the interview were: age, sex and race, marital status; outpatient or hospitalization (duration); family; onset; quality of affection; megalomania; use of drugs; depression—suicidal; anhedonia; anxiety; anger; psychotic behavior; intelligence quotient; thought disorder; organization; confusion; flooding of stimuli; identity; paranoia and projections; dependency; sexual behavior and preference; humor; attitude toward body; interview vs. behavior; defenses; courses in hospital; plans for future.

These topics later became the focus for our special rating scales, called the Schizophrenia State Inventory (SSI). The interview was played to a research team of two psychiatrists, one psychologist, and one social worker. The group rated each patient on several dimensions of psychological functioning. Several months later and without reference to the ratings, the group decided on a clinical diagnosis for the patient. This diagnosis was compared with that arrived at by the patients' psychiatrists, who was not part of the team. The ratings were recorded on the SSI for each of the di-

Table 1. Schizophrenia State Inventory (SSI)

Check the highest appropriate number. Also add *a* if this item(s) is reported as having occurred in the past or *b* if the item(s) are observed or reportable in the present.

I. Language Problems
- 0. Well-modulated, no impairment in syntax.
- 1. Mild paucity of thoughts and reduced richness in language.
- 2. Language well-modulated in referrence to impersonal things, but occasional impairment when reference to the self or a threat to the self.
- 3. Circumstantiality
  Literalness
  Concreteness
- 4. Antithetical meanings manifested
- 5. Autistic intrusions
  Predicative identifications
  Loosening of associations
  Blocking
- 6. Perseverations
  Echolalia
  Neologisms
  Incoherence

II. Anxiety
- 0. Normal alertness
- 1. Episodes of apprehension
- 2. Episodes of panic
- 3. Episodes of dread of self-dissolution and/or world-destruction fantasies.
- 4. Episodes of feeling the world has already ended.
- 5. Continuous feelings of dread (reportable)
- 6. Catatonic excitement.

III. Pleasure
- 0. Pleasure in accordance with external events.
- 1. Occasional but rare pleasure in accordance with external events.
- 2. Occasional pleasure but occurs discordant with external events.
- 3. Lack of humor.
- 4. No convincing report of ever having fun.
- 5. No joy, exuberance, or knowledge of shared happiness.
- 6. Constant sadness or boredom.

IV. Unintegrated self (These are states of being)
- 0. Well-differentiated roles.
  Stable sense of self
- 1. Shifting of roles within a situation or from situation to situation is poorly modulated.
  Identity felt as a function of role or situation.
  Grossness of role models, i.e., awkwardness and "as if."
  Quality to various roles.
  Adoption of inappropriate roles to external requirements.
  Single role from situation to situation.
- 2. Certain instances of hypochondriasis of psychosomatic disturbances.
  Disorders of volition
- 3. Splits in viewing the self.
  Dress or grooming consistent except for a circumscribed part.
- 4. Inability to differentiate or assess other people's roles or moods.
  Pronounced passive compliance.
  Negativism
  Grandiosity

mensions of functioning which we thought to be important on an a priori basis. Table 1 contains the dimensions to be rated and the scale anchoring points.

Schizophrenia State Inventory (continued)

5. Dysynchrony of body parts.
   Posturing
   Aberrations in body self such as body image distortions, somatic delusions, bizarre hypochondriosis.
   Derealization
   Depersonalization
6. Feelings—delusions of influence.
   Persecutory or erotic delusions.
   Auditory hallucinations where the sounds or voices are identified as a collective with certain aims.
   Loss of self such as in command automatisms and catatonic stupor.

V. Inconsistency—consistency axis
   A. Thinking
      0. Logical and appropriate
      1. Circumstantiality—i.e., thoughts not directly related to conclusions.
      2. Ambivalence of thought in which contrary thoughts exist simultaneously without a feeling of paradox or an attempt to unify or synthesize.
      3. Thoughts inconsistent with external demands, i.e., outside information does not revise or change a set. Obsession to delusions.
         Maintenance of a rigid internal set.
         Hypermnesia or rigid adherence to detail, though they be extraneous, to complete a thought to confabulation.
         Recurrence of same theme to perseveration.
         Rigid reliance on external structure for directing thinking—passive responsiveness to command automatism.
      4. Thoughts and affect not related or one thought evoking a number of affects or one affect manifested through different emotionally toned themes.
      5. Thoughts not related with one another in socially consensual ways.
         Linkage seems awry.
      6. Amorphous
   B. Affect (does not include anxiety or dread)
      0. Affect consistent with reality.
      1. Affect changeable during the same thoughts.
      2. Affect shifting rapidly in intensity.
      3. Ambivalence of affect toward the same object existing simultaneously without a feeling of paradox.
      4. Affect not congruent with the situation.
      5. Flatness or maintenance of a singular affect as in the angry paranoid.
      6. Uncontrolled affects such as violent rages.
         Affects observed not consistent with affects reported.
   C. Perception
      0. Realistic
      1. Denial of percepts or parts of percepts.
      2. Behavior or affect not congruent with either the perception or stimuli of the outer world, e.g., feeling menaced by some unknown force yet soliciting attention.
      3. Feeling of some inexplicable change in the perception of the outer world.
      4. Hyperconsistency—singular perception toward all people (part-object) either neutral, erotically (as in erotomanic), or hostilely as in a persecutory delusion.
      5. Same people viewed differently at times with or without rapid shifts.
         Confusion of one person with another or of self and another.
      6. Distorted perception of inanimate objects.
         Total loss of reality testing such as catatonic excitement.

The first dimension, language problems, requires some discussion. It is from the patient's use of language that the diagnosis of schizophrenia is often made, inasmuch as the presence of thinking disorders is assessed from

speech samples. The seven points on the scale represent degrees of severity, from no thought disorder to pervasive thought disorder. Although disorders of thinking are present in many psychopathological conditions, the kind of thinking and speaking manifested by schizophrenic patients is, we believe, unique.

In mild cases of schizophrenic psychoses and in nonpsychotic schizophrenics, the thought disorder may be mild, sporadic, or occasional, and may be overlooked in ordinary conversation, because one can fill in the communicational gaps. Yet, in careful listening to the tape recording of schizophrenic patients, the thought "slippage" can be discerned. For example, the patient may omit ideas essential for the listener to grasp the continuity (ellipsis), as if the patient assumed that the listener must know the full thoughts. Occasionally even in mild cases, words will be used idiosyncratically, or idiosyncratic words will be used (neologisms).

In more severely disorganized patients, the kinds of thought disorder described by many investigators are extant, such as autistic intrusions, predicative thinking, blocking, flooding, incoherence, concreteness, neophobia, overinclusiveness, and paralogical thinking. Although some gifted people can approximate such instances of slippage, as in humor or in poetic or other literary devices, these artistic people are deliberately striving for these effects. With schizophrenic patients, they are not produced for artistic effects and they are not under voluntary control.

Thought disorders may be apparent in one or several psychological acts, such as perceiving, speaking, recalling, writing. Most schizophrenic patients manifest thought disorder in the course of communicative behavior. Our view is that the presence of thought disorders does not necessarily implicate a defect of the part process in which it is seen—e.g., language behavior, perception, memory, attention. Rather, it may reflect a more general impairment or dysfunction in the capacity to organize sensory and ideational experiences or to maintain the organization of ideas and percepts which had once been established.

On the basis of the clinical conferences during which the research team listened to and judged the interviews, the 105 patients were classified into the following diagnostic categories: acute schizophrenia with mixed symptomatology; chronic schizophrenia with mixed symptomatology; paranoid schizophrenia; schizophrenia with convulsions; schizoaffective; nonschizophrenia (including hospitalized depression—monopolar and bipolar—character disorders, and neuroses).

Our definition of the five categories of schizophrenia are of course tentative and are confirmable by our planned long-term followup studies.

Characteristics of Schizophrenia

A study of all 105 patients strongly suggests that characteristic of all the schizophrenics is a pervasive difficulty in maintaining organizational coherence. In the acute phases, patients struggle to keep from being flooded by sensory stimulation. Percepts and ideas are organized in a fluid manner and both the external world and self-feelings are marked by instability. During the early phases of the illness, patients struggle desperately to keep order in their thoughts, affects, actions, and perceptions. Yet, in periods of remission or in nonpsychotic schizophrenic periods, the quality of organizational instability is also prominent.

A second feature is their pleasureless demeanor. Although some schizophrenic patients reported having had

fun during childhood, for the most part these young patients report a pervasive inability to derive much joy from life. Even when moderately successful, they showed a kind of dampening in their joy and an absence of pleasure. In contrast, the nonschizophrenic hospitalized patients could describe episodes of enjoyment not only in retrospect, but even in their present hospitalization. Further, the view of their own future described by the schizophrenic patients held little prospect of amelioration.

A third feature was the predominance of excessive dependency. This tendency is obvious not only in relationships of patients to their families, but also as patients to the hospital, staff, and particularly to their therapists.

A fourth noteworthy feature is deficiency in competence. Although the patients in the schizophrenic groups are all within the normal to superior range of intelligence, they were achieving less than one would have expected. Although the most clearly incompetent patients were those in the chronic schizophrenic group, none of the patients in the other schizophrenic groups could be considered to be competent. At the conclusion of their hospitalization most of the schizophrenics accept this fact and lower their goals for future careers.

A fifth feature is the precipitant for the hospitalization. In most, but not all, schizophrenic patients the precipitating event of the psychosis or of the hospitalization was a challenge to their self-esteem. For some patients it was the breakup of a love relationship; for others, it was leaving home for the first time to enter college; and for others, it was a rebuff of a person important to them, such as a teacher, an employer, or a doctor.

As for the age of onset of the psychosis, only in the chronic group could we find evidence for clear psychotic behavior in childhood. Other patients seemed to be free of psychosis until the episode that brought them to the hospital in their late teens or early 20s. However, there were indications in all patients of excessive dependency, degree of anhedonia, diminished competence, and a pervasive difficulty in feeling themselves as cohesive persons with a continuity in time and with an enduring organization.

It was striking that these young schizophrenic patients were able to maintain appropriate behavior during the interview, despite periods of psychotic and highly variable behavior on the nursing unit. This seems to indicate that some parts of the self-system operate on a more mature level despite the lack of development and/or regression of other parts.

We would suppose that the five features reflect a more basic, hypothetical dysfunction in maintaining the kind of organization necessary for appropriate, adaptive orientation to one's surroundings and to oneself. This basic disorder, we would hypothesize, need not lead inevitably to psychosis. The loose adherence to stable organizations may sometimes lead to reorganizations of reality that may even have social, artistic, or scientific value. We would suppose, however, that a significant degree of competence among other factors would be necessary for such an outcome.

Condensed with permission from the *Archives of General Psychiatry*, 28(2):168-175, 1973. Copyright 1973 by the American Medical Association. Reprints of original article from Roy R. Grinker, Sr., M.D., Institute for Psychosomatic and Psychiatric Research and Training, Michael Reese Hospital and Medical Center, 29th Street and Ellis Avenue, Chicago, Ill. 60616

Provocation of Schizophrenic Symptoms by Intravenous Administration of Methylphenidate

David S. Janowsky, M. Khaled El-Yousef, John M. Davis, and H. Joseph Sekerke

Provocative tests such as the tensilon test for myasthenia gravis can provide both etiologic and diagnostic information. In psychiatry, anecdotal reports indicate that the amphetamine-like psychostimulants such as methylphenidate, may cause an intensification of psychotic symptoms. If methylphenidate does cause partially remitted schizophrenics to revert to the extremes of their clinical picture, this drug might be a specific tool in the investigation of biochemical factors underlying schizophrenia. For this reason, the effects of methylphenidate on actively ill and remitted schizophrenics, manic-depressives, and normals were studied.

Research Design

A total of 22 patients with schizophrenia were selected for the study. They had at least three of the following symptoms: a primary thinking disturbance; flattened or inappropriate affect; catatonia, bizarre mannerisms, or stereotyped movements; delusions or bizarre thinking; hallucinations. No patient was considered to be schizophrenic unless at least one of the secondary symptoms of schizophrenia such as hallucinations or delusions was manifested. In addition, three remitted asymptomatic patients with a history of schizophrenia, 10 patients with manic-depressive illness with active manic symptoms, four depressed patients, and 12 normal volunteers were included.

A single intravenous injection of either 0.5 mg/kg of methylphenidate or placebo was administered on a double-blind basis to all subjects over a 30-second period. Behavior was rated at 5-minute intervals for 30 minutes and at 15-minute intervals thereafter for 2 or more hours in the first 12 actively ill schizophrenics, the first two remitted schizophrenics, all manics, all depressed patients, and all normal volunteers. The remaining 10 actively ill schizophrenics and one remitted schizophrenic patient were rated only during the placebo baseline phase and at 15 minutes after the administration of methylphenidate. A trained nurse-rater who was unaware, as was the patient, of whether placebo or methylphenidate was being administered rated the patients. Symptoms noted were psychosis, interaction, anxiety, and depression.

A number of the patients (13 actively ill schizophrenics, seven acute manics, and three depressives) received a second injection of methylphenidate after maximum clinical improvement had occurred—no sooner than 4 weeks after the initial infusion.

Effects of Methylphenidate

Changes in actively ill schizophrenics—For the 22 actively ill schizophrenic patients, there was a significant, dramatic intensification of preexisting psychotic symptoms such as hallucinations, delusions, inappropriate affect, and catatonic posturing. Qualitatively, a given patient's symptoms generally reverted to that manifested during the most severe phase of illness. Symptom activation occurred within 1 to 2 minutes of injection and intensified to a peak within 15 and 30 minutes. Symptoms spontaneously decreased to their baseline level 2 to 6 hours after administration of methylphenidate. No significant change in

depression scores was noted in the schizophrenic group studied. Anxiety significantly increased in the acute schizophrenic group during the first hour following methylphenidate infusion.

Data also were analyzed to indicate whether antipsychotic drug treatment affected the methylphenidate-induced changes in the actively ill schizophrenic patients. Seventeen of the actively ill patients were evaluated while off antipsychotic medications and 12 were evaluated while on medications (seven patients were evaluated both on and off medications and were included in both the drug-free and the drug-treated groups). All 12 actively ill patients in the drug-treated group were given clinically efficacious amounts of antipsychotic agents (10 received chlorpromazine and two received haloperidol).

For the acutely ill schizophrenic patients, administration of antipsychotic medications did not appear to affect the methylphenidate-induced increased psychosis. The acutely ill schizophrenics evaluated while off antipsychotic medications and those evaluated while on medications showed an increase in their psychosis score between baseline and 15 minutes after methylphenidate infusion, but the differences between scores was not significant. Similarly, antipsychotic medications did not affect the increase in psychosis ratings caused by methylphenidate in the actively ill schizophrenic patients who received methylphenidate both on and off medications.

Changes in remitted schizophrenics—Methylphenidate did not cause a significant increase in psychosis ratings in the remitted schizophrenics evaluated. For the 13 schizophrenic patients who specifically received a methylphenidate infusion both while actively ill and later while in remission, methylphenidate affected the psychosis rating only while the patients were actively ill.

The remitted schizophrenics off antipsychotic drugs and the nine remitted patients on antipsychotic medications showed no significant change in psychosis ratings 15 minutes after methylphenidate infusion. Administration of antipsychotic medications did not alter the methylphenidate-induced increases in the interaction scores in the remitted schizophrenic patients.

In both the actively ill and the remitted patients, no changes occurred with placebo. Most patients were able to tell whether placebo injection or active drug had been given.

Examination of the individual methylphenidate-induced changes showed that only four of the 10 manic patients showed dramatically increased psychosis ratings after methylphenidate infusion. Generally, the content of the psychotic material was grandiose, elated, or paranoid in nature.

Of the 10 acutely ill manic patients, five showed increased manic symptoms, three showed no change, and two showed decreased manic symptoms after receiving methylphenidate.

Methylphenidate did not increase psychosis scores in the seven manic patients tested again after remission had occurred. These seven included two of the four manics who previously had shown dramatic psychosis activation with methylphenidate.

Changes in depressed patients—The depressed patient group showed no significant increase in psychosis scores following methylphenidate administration. In two cases, depression was significantly and dramatically alleviated, and the patients entered a euphoric, hyperverbal state, which lasted 1 to 2 hours. In the other two cases, methylphenidate caused a dramatic cathartic reaction, with much reminiscence,

crying, and verbalization of conflict-laden material. In the three depressed cases who received methylphenidate injections after remission had occurred, only mild talkativeness and increased interactions occurred.

Changes in normal controls—The reaction of the 12 normal controls to the methylphenidate infusion was similar to that of the remitted patients. No increase in psychosis ratings occurred. Most showed increased talkativeness, interactions, and thoughts. Some demonstrated mild anxiety, and others showed euphoria.

Cardiovascular changes—In general, the behavioral changes induced by methylphenidate correlated over time with changes in blood pressure and pulse rate. In the actively ill schizophrenic patients, blood pressure and pulse rate correlated significantly over time with psychosis activation and increased interactions. In the manic patients, depressed patients, and normals, interaction ratings correlated significantly with pulse rate and blood pressure changes.

The activation of psychotic symptoms by methylphenidate allows for certain inferences concerning the cause of schizophrenia. The phenomena are consistent with the hypothesis that methylphenidate intensifies psychotic symptoms by affecting central dopamine activity.

Also consistent with indications that schizophrenia may in part be caused by excess dopaminergic activity is the recent finding that platelet monoamine oxidase is decreased in schizophrenics. If brain monoamine oxidase is similarly decreased in schizophrenics, it is tempting to speculate that methylphenidate-induced psychosis activation is related to this monoamine oxidase defect in that: endogenous central monoamine levels would be expected to be higher in schizophrenics, and/or that central monoamines released quickly by methylphenidate could be expected to be released in an active form since they would not be effectively metabolized intracellularly via deamination, and/or that methylation, rather than deamination, would be more likely to occur during monoamine metabolism in schizophrenics. Therefore, it is possible that methylphenidate would differentially activate psychotic symptoms in schizophrenics by causing the release of central dopamine which would then be ineffectively or aberrantly metabolized due to a defect in monoamine oxidase activity.

The mechanism of action by which methylphenidate activates underlying psychotic symptoms is uncertain. We do not recommend its use for diagnostic purposes, except under very special circumstances. However, in a number of subjects, methylphenidate has clarified the nature of the illness by causing a dramatic intensification of symptoms. Also, the methylphenidate interviews provided information concerning the nature of a patient's conflicts, preoccupations, ideas, and thoughts. Thus, the observation that methylphenidate can be clinically useful is one worthy of recording. However, since information elicited in methylphenidate interviews can usually be obtained by interpersonal means alone, without incurring such risks as the liability for medication abuse and tachycardia, it would seem inappropriate to use methylphenidate in usual clinical practice.

Condensed with permission from the *Archives of General Psychiatry*, 28(2):185-191, 1973. Copyright 1973 by the American Medical Association. Reprints of original article from David S. Janowsky, M.D., Department of Psychiatry, Vanderbilt University, School of Medicine, Nashville, Tenn. 37203

Reduced Monoamine Oxidase Activity in Platelets: A Possible Genetic Marker for Vulnerability to Schizophrenia

R. J. Wyatt, D. L. Murphy, R. Belmaker, S. Cohen, C. H. Donnelly, and W. Pollin

We recently described a reduction of monoamine oxidase (MAO) activity in blood platelets in a group of 33 patients with chronic or acute schizophrenia. In that and subsequent studies, attempts to assess whether influences secondary to the process of being schizophrenic (diet, drugs, and hospitalization) might affect platelet MAO activity have been hampered by the inseparability of these secondary factors from the illness. We attempted to control such artifacts by examining monozygotic twins discordant for schizophrenia.

Thirteen pairs of monozygotic twins discordant for schizophrenia and 23 normal nontwin controls were studied. The schizophrenic twins had all been hospitalized for behavior diagnosed as schizophrenia; one was currently hospitalized, and five were in remission. Except for one individual with borderline psychosocial functioning, the nonschizophrenic cotwins had never been hospitalized for a behavioral disorder, were not taking drugs, and were functioning well within their families and communities. The 23 normal controls had never had a psychotic illness.

Monoamine oxidase activity in platelets was determined by measuring the deamination of [14C] tryptamine bisuccinate, and expressed as the amount of labeled metabolites formed per milligram of platelet protein per hour. For the 23 normals, the enzyme activity was no different than that of 22 normals previously studied. The MAO activity of schizophrenic twins was significantly lower than that of the 23 normals. The values for the nonschizophrenic twins were also lower. There was no significant difference in MAO activity between the schizophrenic and nonschizophrenic twins, and there was a significant correlation between enzyme activities in schizophrenic and nonschizophrenic twins.

It cannot be concluded that low MAO activity in platelets is a primary genetic alteration in schizophrenia. While such an alteration could be involved in the pathogenesis of this disorder, the alteration could be secondary to other genetic factors that might regulate MAO activity in platelets or be incidentally related but genetically linked to the pathogenetic mechanism of schizophrenia. Or a factor occurring in utero or in early life could yield this difference in MAO activity. It should be possible to determine whether relatives of schizophrenic individuals also have reduced MAO activity and, if so, how this alteration is transmitted. Also, it would be useful to know whether the difference in platelet MAO is representative of a generalized deficiency in MAO or one of its isoenzymes, and, specifically, whether there is a deficiency in brain MAO. Since a generalized deficiency in MAO activity would be consistent with theories relating to abnormalities in indoleamine and catecholamine metabolites in schizophrenia, it will be of interest to determine which of the substrates for MAO is most affected by this abnormality.

Condensed from *Science*, 179(4076):916-918, 1973. Copyright 1973 by the American Association for the Advancement of Science. Reprints of original article from R. J. Wyatt, M.D., Laboratory of Clinical Psychobiology, National Institute of Mental Health, Bethesda, Md. 20014

Drug and Sociotherapy in the Aftercare of Schizophrenic Patients: One-Year Relapse Rates

Gerard E. Hogarty, Solomon C. Goldberg, and the Collaborative Study Group

Rehospitalization of the schizophrenic patient continues to be a major concern. Studies attempting to identify the variables that influence tenure and adjustment in the community have often concluded that aftercare in general, and maintenance chemotherapy in particular, reduce the incidence of rehospitalization.

For nearly two decades antipsychotic drugs have been used to maintain schizophrenic patients in the community. The validity of the practice appears to be more firmly established by controlled studies that seek to prevent the hospitalization of acutely ill patients than by investigations designed to explore the prophylactic action of drugs among recently discharged and at least partially remitted patients.

While attempts to prevent hospitalization have been successful, the level of the schizophrenic patient's instrumental role performance and social adjustment seems low. For this reason, as well as the fact that increasing numbers of schizophrenics are being treated and maintained in the community, concern surrounds the efficacy of sociotherapeutic aftercare strategies for enhancing community adjustment. Inpatient comparisons of drug and nondrug treatments of schizophrenics yield mixed results, with the better-designed studies showing no specific advantages of nondrug intervention. No such controlled comparisons are available for schizophrenic outpatients following hospitalization.

The National Institute of Mental Health (NIMH) Collaborative Outpatient Study in Schizophrenia is a multiclinic attempt to provide evidence on how two modes of treatment (drug and sociotherapy) interact in the prevention of relapse and enhancement of community adjustment over a period of time. This report focuses on the differential relapse rates during the first-year post discharge.

Research Procedures

Study design—Hospitalized schizophrenic patients at each of three Maryland State hospitals were selected and prepared for the outpatient study prior to being consecutively discharged over an 18-month period to an outpatient clinic affiliated with the parent hospital. They were randomly assigned at intake to major role therapy (MRT), a sociotherapy consisting of individual social casework and vocational rehabilitation counseling. All patients were maintained with drug therapy during the first 2 months with medication gradually shifted to chlorpromazine (Thorazine) exclusively. At 2 months following intake, patients were again randomly assigned on a double-blind basis to identical looking 100-mg. or 50-mg. tablets of chlorpromazine or placebo. A patient was considered a study participant when he received coded medication at 2 months. Fifteen male and 15 female patients at each clinic were to be randomly assigned to each of four treatments at the 2-month period: chlorpromazine alone, placebo alone, placebo and MRT, chlorpromazine and MRT. The 360 patients were then to be treated for 2-3 years.

Criteria for case inclusion—To be eligible for the study, patients had to meet the following criteria: age 18–55; a primary hospital diagnosis of

schizophrenia; currently hospitalized for less than 2 years; no evidence of organic brain syndrome; IQ above 70; no unmanageable drinking or drug abuse history; no suicidal or homicidal history; received phenothiazine as an inpatient and have no contraindications for chlorpromazine therapy; live within commuting distance of the clinic; provide a "significant other" for rating purposes and supervision of medication; appear at the clinic within 21 days of discharge; receive no other ataractic other than study medication during the course of the investigation; be a wage earner or homemaker.

Measurements and evaluations—Patients were evaluated on psychiatric history, psychopathology, social behavior, and adjustment as reported by the treating psychiatrist, social worker, vocational rehabilitation counselor, research assistant, family member, and patient. Patients were evaluated at discharge, at intake, and at 1, 2, 6, 12, 18, 24, and 36 months following intake. Termination ratings were completed if termination occurred prior to the end of the study. A minimum dose requirement of 100 mg. of chlorpromazine a day was established; likewise, MRT required at least monthly contact. Non-MRT patients were seen on a monthly basis for the first 2 months, and at least bimonthly thereafter for regulating medication. All eligible patients had at least one and an average of 10 problem areas considered to be the proper object of casework intervention. The typical treatment team consisted of two part-time psychiatrists, two social workers, one part-time vocational rehabilitation counselor, a research assistant, and secretary. Relapse was judged by the psychiatrist to mean clinical deterioration of such magnitude that hospitalization seemed imminent.

Findings

Three hundred seventy-four of the 513 eligible discharged patients survived the 2-month transition phase prior to the reception of coded medication. They were assigned to treatment groups as follows:

No. of subjects	*Treatment*
97	Drug alone
87	Placebo alone
95	MRT and placebo
95	MRT and drug

Patient characteristics—The sample reflects typical demographic and history characteristics of hospitalized schizophrenic patients, particularly regarding diagnostic subtype, onset of symptoms prior to hospitalization, number and length of prior hospitalizations, and social class.

Terminations—Only 36, or 7 percent, of otherwise eligible patients refused to attend the clinic following discharge. Of 451 patients who appeared at clinic intake, approximately 6 percent voluntarily discontinued during the 2-month transition phase, some because of apprehension surrounding the possibility of receiving placebo. Over the next 10 months of controlled treatment, 2 percent of the active patients sought treatment elsewhere. Not all patients treated between the second and twelfth months participated fully. Excluding administrative terminations, if a patient had been seen a minimum of three times prior to receiving coded medication, he was considered a participant and was continually pursued, even though he might miss regularly scheduled evaluations or appointments. Nine percent of the sample relapsed during the first 2 transitional months while all were assigned to drugs.

Of the 17 administrative terminations following discharge, nine failed to meet study criteria as originally

thought, five moved, and three were dropped for illness, arrest, and problems with another agency. Reasons for later administrative terminations included moving, drug side effects, death, two hidden addictions, two unjustified arrests, and one problem in which drug therapy interfered with the patient's employment.

Drug and MRT effects on relapse—The cumulative relapse rates for each treatment was calculated in the following manner: The number of patients who relapse in a given month is expressed as a percent of the original N in that treatment group. This original N is subsequently corrected (lowered) by administrative terminations that occur during the month. The percentage relapsed in any month is added to the percentage relapsed in the preceding month(s).

At the end of 12 months, 72.5 percent of the placebo alone group had relapsed, 62.65 percent of the placebo + MRT group, 32.60 percent of the drug alone group, and 25.74 percent of the drug + MRT group. Overall, 67.48 percent of all placebo-group patients and 30.91 percent of all drug-group patients relapsed between the second and twelfth months. Comparably, 45.79 percent of all MRT patients relapsed while 51.39 percent of all non-MRT patients relapsed. The difference between the drug and placebo relapse rates is highly significant statistically. The difference between MRT and non-MRT over the entire controlled phase is not significant. The difference between MRT and non-MRT up to 6 months favors non-MRT, but this difference is not significant. If one analyzes the effect of MRT on relapses after the sixth month, however, MRT is reliably more effective than non-MRT.

Interaction of drug and MRT—A second question is whether MRT has a greater effect in drug-treated patients than in placebo patients. The drug-placebo difference for MRT patients is about 37 percent while the comparable difference for non-MRT patients is about 40 percent. These two differences do not approach statistical significance, from which we concluded that the effect of MRT on relapse is essentially constant for both drug and placebo patients or, as a corollary, that the size of the drug effect is virtually constant for both MRT and non-MRT patients. In statistical terms, the effects of drug and MRT are additive as opposed to interactive. In practice, patients should receive both to achieve the maximum effect.

Replications of results across clinics—One reason for using three clinics was to see whether the same results were obtained at each clinic. If they were, then the results concerning treatment effects could be stated with even greater confidence regarding their generalizability to different locations. A comparison among the three clinics on the size of the drug-placebo difference shows differences that are virtually constant across clinics and do not even approach statistical significance.

A comparable analysis was done for the size of the MRT–non-MRT difference. Although one clinic obtained different results from the others between 2 and 6 months, these differences are not statistically significant. We conclude that the superiority of MRT over non-MRT, particularly in the latter months, is not a function of the specific clinic in which it was obtained.

Effect of regularity of medication taking—The relapse rate among drug-treated patients (30.91 percent) is seemingly high. This drug relapse rate must be qualified in light of the patient's medication-taking practice.

The medication-practice data were based on reports from patients and their families. Fifty percent of the drug patients experiencing relapses in the first 2 months were not taking medication. Likewise, 54.5 percent of drug failures between 2 and 12 months were not taking medication during the month prior to relapse. Including only drug takers, we would estimate that 20 percent represents a more accurate drug relapse rate in the first year following discharge.

The relationship between cessation of medication and relapse, however, is not as clear as it first appears. The relationship exists for placebo as well as drug, but twice as many replase on placebo as drug. It is not clear from our data whether the cessation of medication occurs when a patient is in remission or follows an exacerbation of symptoms.

Clinical course of relapsed placebo patients—Finally, any discussion of relapse rates should consider whether the maintenance chemotherapy of patients in partial or full remission represents prophylactic or therapeutic drug action. One approach to the problem includes an evaluation of psychopathology which characterized placebo-treated patients, particularly during their prerelapse clinical status.

Nine items from the Brief Psychiatric Rating Scale (BPRS) were scored as a single measure: emotional withdrawal, conceptual disorganization, mannerisms and posturing, grandiosity, suspiciousness, hallucinatory behavior, motor retardation, uncooperativeness, and unusual thought content. While placebo patients relapse at a rate twice as great as drug patients, the nonrelapsed placebo patients who survive 1 year are indistinguishable at this level from nonrelapsed drug patients. Furthermore, among late placebo relapses (months 7 to 12), the prerelapse clinical picture of placebo patients is very similar to the successfully treated drug patient. Clearly, then, among many schizophrenics in remission longer than 6 months, drug action is essentially prophylactic; i.e., the prerelapse clinical picture of drug and placebo patients is similar, but placebo patients then proceed to relapse at a rate twice as great as drug patients. Therapeutic drug action is more apparent among early placebo relapsers, who experience a dramatic increase of existing symptoms immediately following initiation of placebo.

Comment

The motivation for the NIMH study derives from the recognition of the repeatedly hospitalized schizophrenic as a major public mental health problem. The question is how to interpret this process of rehospitalization in order to diminish the likelihood of ultimate chronic hospitalization and to enhance the quality of life in the community.

Drugs and sociotherapy—Two forms of therapy in common clinical practice were used—drugs and social casework. Our expectation for social casework was not so much for effectiveness in reducing relapse as it was for enhancing the quality of adjustment of patients who did not relapse. Thus, it comes as a surprise that the data suggest social casework might be effective in reducing relapse for some schizophrenics after a period of time. This result is qualified because the effect is not large, as is the drug effect, and casework is not blind to those who evaluate relapse, as is the case with drug treatment. We therefore consider the effect of social casework as a suggestive preliminary indication of its possible effects on aspects of adjustment.

The effect of drugs in reducing relapse can only be characterized as huge. Unlike in-hospital studies, the effect of drug is not the therapeutic one of reducing symptoms, but rather the prophylactic one of forestalling the onset of a further episode from a state of at least partial remission.

Treatment-specific relapse rates must further be qualified in terms of treatment exposure, adequacy of treatment, and inappropriate hospitalization. These qualifications apply to MRT as well as drug-treated patients. If only MRT "utilizers" were included, their relapse rate might well have been lower. Likewise, some non-MRT patients constantly pressured staff for service (calling daily, for example) and probably lessened the MRT/non-MRT differences even further.

Within the limitations of this preliminary report, conclusions reported elsewhere can be challenged by our results. The question whether a drug really reduces the incidence of rehospitalization for schizophrenics can be answered affirmatively, and conflicting results from uncontrolled studies and pre-post drug-era comparisons should be rejected.

Regularity of medication taking—Likewise, the implication that those who discontinue the use of medication are those who need it least would not be supported by our data. Placebo relapsers fail to take their medication in the same proportion as drug relapsers. If schizophrenia represents a psychopathological means of coping with a threatening world, then cessation of pill-taking among remitted patients might be more a flight to illness than to health. Once in the community, the nonschizophrenic world might come to be viewed as less attractive and manageable than a schizophrenic existence. Cessation of medication would assuredly portend a rapid return to illness, and our results raise the possibility that nonmedication takers might know full well how the drug acts. Only future research, directed toward assessing the patient's clinical status and motivation at the time of discontinuation, will answer this important question.

Delayed effect of MRT—The fact that the effect of MRT does not begin to appear until after 6 months of treatment leads to a clear implication for any future evaluation of the psychotherapies with previously hospitalized schizophrenics that treatment duration may have to be at least 1 year.

Comparison with other studies—Our unqualified crude-relapse rates on drug and placebo appear higher than reported in the literature, although the discrepancy is probably due to the absence of conformity among studies regarding patient selection, experimental design, or even location. Until relapse rates are specified for well-defined subgroups of patients along prognostic guidelines that are, in turn, based on relevant demographic, clinical, and psychological characteristics, then our understanding of treatment is severely restricted and comparisons of differential relapse rates between studies give only weak indications of treatment efficacy.

Condensed with permission from the *Archives of General Psychiatry*, 28(1):54-64, 1973. Copyright 1973 by the American Medical Association. Reprints of original article from Gerard E. Hogarty, MSW, Chief, Social Science Research, Friends of Psychiatric Research, Inc., 102 Bloomsbury Avenue, Baltimore, Md. 21228

Response to Triiodothyronine and Dextroamphetamine: A Study of Preschool Schizophrenic Children

Magda Campbell, Barbara Fish, Raphael David, Theodore Shapiro, Patrick Collins, and Celedonia Koh

A clinical trial in which triiodothyronine was administered to two euthyroid autistic boys resulted in increases in alertness, social and affective contact, and speech, as well as decreases in stereotypy. That trial led us to initiate a controlled study to examine thyroid function in greater detail. Dextroamphetamine was used as a control because both agents exert some of their actions via the adrenergic system.

The subjects, all patients in a children's psychiatric inpatient service facility, were 13 boys and 3 girls, 3 to 6 years of age. Ten were schizophrenic and two autistic. The remaining four represented chronic brain syndromes associated with withdrawing reaction and behavior disorders. The children's intellectual functioning ranged from average to severely retarded. Thyroid disease was on record in the family histories of two children, an incidence higher than that in general population. The children were euthyroid and physically healthy. Admission was followed by a complete diagnostic evaluation as well as laboratory workup.

As part of their baseline evaluation, the subjects received dextroamphetamine for 3 to 4 days, starting with 5 mg. in a single dose and up to an arbitrary 10 mg. per day. The dose was individually regulated during the first 2 to 3 days in order to reach a level at which drug activity could be observed without the signs of excess dose. This acute dextroamphetamine trial constituted a part of a crossover design developed to provide a pharmacologic "yardstick" to evaluate the activity of new drugs in severely disturbed children. Dextroamphetamine was followed by 4 weeks on placebo.

Triiodothyronine was administered orally in a single dose every morning, starting with 12.5 mcg. per day. The doses were individually regulated to determine the maximum tolerated dose (up to 75 mcg.). All children were maintained on triiodothyronine from 11 to 19 weeks, including a minimum of 4 weeks on the maximum tolerated dose.

No drugs were given except for chloral hydrate to sedate children who were not able to cooperate while x-rays and electrocardiograms were in the process of being taken.

The identity of the medications was known only to the research psychiatrists and nurse. The research psychiatrist who functioned independently as a "blind" observer rated the children on the ECDEU Clinical Global Impressions Rating Scale and also on symptom severity scales. Ratings were performed 1 week before as well as during the "optimal" dose of acute dextroamphetamine trial, again after 4 weeks on placebo, and during the final week of triiodothyronine treatment.

Response to Triiodothyronine

The "optimal" doses of triiodothyronine ranged from 12.5 to 75 mcg. per day, and were not related to chronological age, body weight, motor activity, or affectivity. The 12 psychotic children as a group tolerated higher doses than the four children who were not psychotic.

According to the "nonblind" psychiatrist, triiodothyronine treatment yielded marked improvement in 11 children, slight in three, none in one, and deterioration in one. Generally, triiodothyronine caused many symp-

toms to decrease and the improvements were often marked in both the psychotic and nonpsychotic children. Triiodothyronine yielded stimulating effects in 14 children, increases in affective responsiveness in 13, gains in verbal production and vocabulary in 12, language comprehension in 10, and increases in energy and motor initiation in seven. Moreover, there were decreases in stereotypy, distractibility, psychotic speech, hyperactivity and impulsivity, negativism, and irritability. The children played more and those who were psychotic became less disorganized. Many children maintained some of the gains, such as vocabulary, language comprehension, and organization of play, even after the discontinuation of triiodothyronine.

According to the "blind" psychiatrists's ratings at the end of triiodothyronine treatment, there was no significant change in global rating, even though eight patients showed improvement, seven no change, and only one a deterioration. On our symptom severity scale, there was a significant decrease in symptomatology at termination of the study. Overall improvement was marked in 15 of the 16 children, with one showing a trivial increase in symptomatology. An analysis of individual symptoms indicated some decrease for eight of the nine key symptoms (withdrawal, decreased attention span, negativism, decreased amount of speech, psychotic speech, blunting of affect, explosiveness, and motor retardation). The greatest improvement was an increased production of speech and lengthened attention span.

Response to Dextroamphetamine

The "optimal" doses of dextroamphetamine ranged from 1.25 to 10 mg. per day. Again, tolerance differed between psychotic and nonpsychotic children; psychotic children tolerated lower doses of dextroamphetamine than the nonpsychotic.

According to the "nonblind" psychiatrist, only one child showed marked improvement, while five showed slight improvement, one no change, and nine a deterioration. In general, not many individual symptoms decreased on dextroamphetamine and the improvements were usually slight. Positive effects on "optimal" doses included increases in attention span and verbal production, and some decreases in hyperactivity.

Dextroamphetamine was equally poor for the psychotic and nonpsychotic children, though the child with the greatest improvement on this drug was not psychotic. Interestingly, the two nonpsychotic children who improved on dextroamphetamine were hypoactive, anergic, and withdrawn, while of the two who deteriorated one was hyperactive and excitable, and the other hypoactive, anergic, and withdrawn.

"Blind" ratings indicated that there were no significant changes. In fact, 10 patients manifested a worsening in symptomatology, while only three improved, and one showed no change.

Untoward Effects

Tachycardia and transient mild diarrhea were the most frequent side effects observed with triiodothyronine. Untoward signs and symptoms were rare during the "optimal" dose and did not interfere with the children's improved functioning.

On dextroamphetamine, the side effects, particularly irritability, hyperactivity, worsening of withdrawal and stereotypy, and loss of appetite, were frequent.

Thyroid Functions

Triiodothyronine was physiologi-

cally active, altering the "free" thyroxine, thyroxine iodine by column chromatography, and total cholesterol values in blood, as well as heart rate and blood pressure. Increases of heart rate as well as systolic and diastolic blood pressures were noted for several children. Pituitary responsiveness was evidenced by a consistent drop in serum thyroxine values in all patients during treatment and return to baseline levels within 1 month after triiodothyronine was discontinued. The electrocardiograms remained normal and there was no significant change in bone age during triiodothyronine therapy.

It is noteworthy that triiodothyronine, a hormone with strong central nervous system stimulating properties, had disorganizing effects causing a worsening of psychotic behavior only on dosage levels that were above "optimal." Actually, psychotic children as a group tolerated higher doses of triiodothyronine than the nonpsychotic (while the opposite was true with dextroamphetamine), and many psychotic symptoms decreased on "optimal" doses. None of our children were hypothyroid, and the four schizophrenic patients who improved on triiodothyronine had somewhat elevated thyroxine baseline values. Atlhough all four were withdrawn, they differed from each other with respect to levels of motor activity and affectivity. And yet all four gave evidence of global improvement. The remaining eight psychotic children who improved on triiodothyronine were also dissimilar in motor and affect. Only the nonpsychotic group showed a discernible relationship between these symptoms and responses to triiodothyronine. The three hypoactive, anergic patients with blunting of affect were stimulated to show marked behavioral improvements, while the hyperactive and excitable child emerged without positive change.

Monoamine neurotransmitters have been implicated in controlling the secretion of hypothalamic releasing factors (including thyrotropin releasing factor, TRF) and of the anterior pituitary hormones (such as the thyrotropin, TSH), which in turn control the secretion of thyroid hormones. In addition to these direct hormonal effects, some observers suggest a link between the monoamines and behavior. Serotonin, as one of such monoamine neurotransmitters, was found to be evaluated in the brain of cretinoid experimental animals, in the blood of hypothyroid human infants, and in some retarded and psychotic children. Thus alterations of neuronal transmission of serotonergic and other neuronal systems (dopaminergic and noradrenergic) could lead to, or be associated with, thyroidal as well as behavioral changes. Central nervous system dysfunction responsible for a general lack of integration or adaptive inefficiency may be reflected at all levels.

Correlation of biochemical, hormonal, and behavioral parameters in a subclass of schizophrenic children, and the changes of these parameters with an effective therapeutic agent such as triiodothyronine, may offer an opportunity to observe the postulated central nervous system events underlying deviant development and behavior in early life.

Condensed with permission from the *Journal of Autism and Childhood Schizophrenia*, 2(4):343-358, 1973. Copyright 1972 by V. H. Winston & Sons, Inc. Reprints of original article from Magda Campbell, M.D., New York University Medical Center, 550 First Avenue, New York, N.Y. 10016

Perception in Chess

William G. Chase and Herbert A. Simon

What does an experienced chess player "see" when he looks at a chess position? By analyzing an expert player's eye movements, it has been shown that, among other things, he is looking at how pieces attack and defend each other. But we know that he is seeing much more. Our work is concerned with just what the expert chess player perceives.

It is known that chess masters search through about the same number of possibilities as weaker players, but they are very good at coming up with the "right" moves for further consideration, whereas weaker players spend considerable time analyzing the consequences of bad moves.

An intriguing difference, however, appears to exist between masters and weaker players in short-term memory. Masters show a remarkable ability to reconstruct a chess position almost perfectly after viewing it for only 5 seconds, although their short-term memory for random placement of chess pieces is no better than that of weaker players. Their superior performance with "meaningful" positions must lie in their ability to perceive structure in such positions and encode them in chunks. Specifically, if a chess master can remember the location of 20 or more pieces on the board, but has space for only about five chunks in short-term memory, then each chunk must be composed of four or five pieces, organized in a single relational structure. Our concern here is to discover and characterize the structures, or chunks, that are seen on the board and stored in short-term memory.

Previous studies of chess perception provide no direct methods for delimiting the chunk boundaries or detecting the relations that hold among the components of a chunk. Evidence is needed on these points in order to discover how many pieces typically constitute a chunk, what the relative sizes are of the chunks of masters and weaker players, and how many chunks players retain after a brief view of a position.

The central objective of this study, then, is to isolate and define the chunks into which information is hypothesized to be encoded in chess perception tasks. We use two techniques, a *perception task* and a *memory task*. By using two different tasks, we obtain some protection against artifacts that might compromise the interpretation of our findings. One important question we shall investigate is whether the chunks defined by the data from the perception task are essentially of the same size and character as the chunks defined by the data from the memory task.

Chess Players' Tasks

Three chess players—a master (M), a Class A player (A), and a beginner (B)—were used as subjects. Twenty games between advanced players were selected from chess books and magazines to generate the stimuli. Ten were middle game positions, at about White's 21st move, with 24–26 pieces remaining on the board. Ten were end-game positions, at about the 41st move, with 12–15 pieces remaining on the board. Not all the positions were "quiet," i.e., some of them caught games at a point where an exchange of pieces was in progress.

In addition to these positions from actual games, eight random positions were generated, four from middle games and four from end games, by

taking actual positions and replacing the pieces randomly on the board.

Perception task—In this task, two chess boards were placed side by side, separated by about 6 inches: One of the 28 chess positions was set up on the subject's left, and the other board, free of pieces, was placed directly in front of him. A full set of pieces was placed to the right of the blank board. A partition between the two boards prevented the subject from seeing the position on the left. When the partition was removed, the subject's task was to reconstruct the position on the board in front of him as quickly and accurately as possible, glancing at the position on the left as often as he wished. His behavior was recorded on videotape.

Memory task—The boards were set up exactly as in the perceptual task. When the partition was removed, the subject was allowed to view the position on the left for 5 seconds, and the partition was then placed in position again. The subject then recalled, by placing pieces on the board in front of him, what he could remember of the position on the left, being allowed as much time as he wished (subjects rarely took more than 1 minute). If the position was not reconstructed perfectly, the board in front of the subject was cleared and a second trial was conducted in the same way: 5 seconds of viewing, followed by free recall of the position. Additional trials followed until the subject recalled the position perfectly, except for the random positions, which were too difficult to continue to criterion.

In both the perception and memory task, each subject processed five middle-game positions, five end-game positions, two randomized middle-game positions, and two randomized end-game positions.

Analysis of Performance

Videotape records for both tasks were analyzed by recording each piece as it was placed on the board, and by recording the time, within $\frac{1}{10}$ second, between the placing of that piece and the next one.

The time intervals were used to segment the protocols in order to test the hypothesis that long pauses would correspond to boundaries between successive chunks, while short time intervals between pieces would indicate that the pieces belonged to the same chunk in memory.

The nature of the chess relations between successive pieces, separated by long and brief pauses, respectively, were analyzed for information that would reveal how pieces are chunked perceptually. The occurrence of each of five chess relations between successively placed pieces was recorded: *attack*—either one of the two pieces attacks the other; *defense*—either one of the two pieces defends the other; *proximity*—each piece stands on one of the eight squares adjacent to the other; *common color*—both pieces are of the same color; and *common type*—both pieces are of the same type.

Accuracy of reconstruction—The accuracy with which the subjects reconstructed positions on the first trial in the memory task was analyzed for comparison with previous research findings. Accuracy was measured by the number of pieces placed on the correct squares of the board on the first trial after a 5-second view of the board. The number of pieces correct on subsequent trials was also computed, but chief interest for our purposes centers in the first-trial results.

In the actual middle game positions, M was able to place an average of about 16 pieces correctly on the first trial, while A and B placed about eight and four, respectively. M repro-

duced the board perfectly in three or four trials, while A typically required about one or two more trials than M, but B took considerably more trials. M showed no such superiority in additional pieces placed in successive trials. In trials just beyond the first, M typically added about four more pieces to his previous reconstruction, while the gains for A and B averaged five or six pieces per trial. This difference disappears, however, when the learning curve reaches the level of M's first-trial performance.

In the end-game positions, M placed an average of about eight pieces correctly on trial 1, while A and B placed about seven and four, respectively. In these positions, M required two or three trials to reconstruct the positions perfectly; A, about three or four; and B, between four and seven trials. Thus, in both middle- and end-game positions from actual games, ability to retain information from a 5-second view of the board was closely related to playing strength.

In the random unstructured positions there was no relation at all between memory of the position and playing strength. Moreover, the first-trial performances of all three subjects on the random positions was even poorer than B's performance on the actual game positions.

On the hypothesis that memory of positions depends on recognizing familiar configurations or chunks of pieces, a grandmaster or master would find it easier to remember positions like those he encounters in his play and study. Our subject, M, when interviewed after the experiment, reported that he was troubled by positions that looked "unreasonable." He also reported difficulty with positions that were not quiet, complaining that he couldn't get the "sense" of the position when it was in the middle of an exchange.

Accordingly, our subjects were tested on nine new positions taken from a book of chess puzzles from actual master games. Although the positions were tactical in nature, they were not in the middle of an exchange. For each subject, nine positions were chosen at random, and a single 5-second trial was conducted. For these new positions, B, A, and M averaged 33, 49, and 81 percent correct, respectively, as compared to 18, 34, and 62 percent, respectively, on the first trial of the previous positions. These data unequivocally replicate previous findings in the area of chess perception.

One unexpected result deserves note at this point. M recognized four of the nine new positions, and always within the first second of exposure, yet M's performance was virtually identical for recognized versus unrecognized positions: 83 vs. 79 percent, respectively. Also, for one of the previous middle-game positions, M suddenly recognized the game after he had placed the pieces on trial 1. This discovery did not, however, improve his recall of the position in any way.

Time intervals—In the perception task, the first thing to look at is the distribution of times between successive pieces placed on the board. These times were analyzed separately for: *within-glance intervals*—intervals between pieces placed without looking back at the original position; and *between-glance intervals*—intervals between two pieces separated by a glance back at the original position.

The results are straightforward and roughly the same, with one exception, for all three subjects. Within-glance intervals seldom exceeded 2 seconds, and the modal intervals were ½ second or less. For the between-glance intervals, there was a significant tendency for the better players to take less time.

In the memory task there is no observable behavior that corresponds to the within-glance, between-glance distinction. If we wish to compare the time intervals for the two tasks, we must use the combined frequency distribution for the perception task.

The distributions of time intervals for the two tasks are not dissimilar. In the perception task, there is a preponderance of intervals under 2 seconds but a "tail" of longer intervals. In the memory task, there are numerous intervals up to about 2½ seconds, and again a tail of longer intervals. The very short intervals in the distributions, ½ second or less, are almost all cases where the subject picked up more than one piece of a kind (pawns or rooks) at once, and placed them on the board in rapid succession. In general, it took at least 1 second to retrieve a piece from the side of the board.

The similarity of the distributions encourages us to consider the following hypothesis about the nature of the perceptual chunks:

- The pieces placed on the board by the subject in the perception task after a single glance correspond to a single chunk. About 2 seconds is required to recognize a chunk and store a label for it in short-term memory. Since short-term memory appears to have a relatively fixed capacity, measured in chunks, it is most reasonable to assume that what is held in short-term memory is not the content of the chunks, but an identifier (label) that allows the content, in long-term memory, to be located and assessed. When the label of a chunk is held in short-term memory, successive elements of the chunk can be recovered from long-term memory in some hundreds of milliseconds.
- A sequence of pieces placed on the board by the subject in the memory task with intervals of less than 2 seconds between successive pieces corresponds to a single chunk. The times required for the underlying processes are essentially the same in the memory task as in the perception task.

If our hypothesis is correct (that time intervals of 2 seconds or more correspond to boundaries between chunks) then an examination of the chess relations between successive pieces within single chunks should show these relations to be quite different from the relations between successive pieces across chunk boundaries. Furthermore, if we are right in equating the significance of long and short time intervals in the two distinct tasks (perception and memory) then the within-chunk and between-chunk chess relations in the perception task should be highly similar to the corresponding relations in the memory task.

Chess relations: *Perception task*—For each subject, the within-glance probabilities and mean interpiece latencies were calculated for each of the 16 possible combinations of attack (A), defense (D), same color (C), same piece (S), and proximity (P) relations.

The data are quite similar for all subjects: Latencies show the same systematic trends, and, for the probabilities, the product movement correlations between subjects are quite high: M vs. A = .93, M vs. B = .95, and A vs. B = .92. The same is true for the between-glance data, and the correlations for the probabilities are about the same size: M vs. A = .89, M vs. B = .89, and A vs. B = .90. Thus, the same kinds and degrees of relatedness between successive pieces holds for subjects of very different skills.

Quite different patterns emerge for the within-glance and between-glance probabilities. The between-glance probabilities are much closer to the chance levels than are the within-glance probabilities. In contrast, the

within-glance probabilities are higher than chance for pairs of pieces with several relations, and lower than chance for pairs with few relations. In particular, the relations AP, DC, DPC, PCS, and DPCS have high probabilities; C, S, and null (—) relations have lower-than-chance probabilities.

These probabilities are informative about the underlying structures that the subjects are perceiving. The relation DPCS is almost totally composed of pawn chains, and the relation PCS consists almost totally of rows of pawns on the same rank. These two relations also have much shorter latencies than the others. The relation DPC consists of pieces placed on adjacent squares which have a defense relation, and the relation DC consists simply of a defense relation which also implies the same-color relation. Low frequencies for the A relation suggest that attacks are noticed only if the pieces are in close spatial proximity. The C, S, and null relations are low because subjects are placing pieces which usually have multiple relations. Thus, from the within-glance relations, it appears that subjects are noticing the pawn structure, clusters of pieces of the same color, and attack and defense relations over small spatial distances.

There is some indication from the between-glance probabilities that subjects are looking back at the chess position in order to complete some partially forgotten information or to obtain new information about a partially completed structure. Subjects also report that sometimes they look back at the chess position for specific partial information. But the striking thing about these data is that between-glance frequencies are much closer to the chance level than within-glance frequencies.

For the between- and within-glance data for the randomized positions, the pattern of probabilities was still the same across subjects. Interestingly, the data look very similar to the data from real positions. Frequencies of the PCS, DPC, and AP relations are higher than chance and of the S, C, and null relations are lower than chance for the within-glance relations, whereas frequencies of the between-glance relations are very close to chance. Apparently, subjects are noticing the same kinds of structures in the random positions as in the game positions even though such structures are rare in the random positions.

The perception experiment procedure offers no guarantee that the subject did not pick up more than one chunk at a glance, but subjects reported that it was most comfortable to glance frequently at the board and not to retain much information in short-term memory.

Chess relations: *Memory task*—The memory data for individuals again show similar patterns of latencies and probabilities for all subjects, and the correlations are about the same as in the perception data: M vs. A = .91, M vs. B = .95, and A vs. B = .95.

The first question of interest concerning the memory data is the relationship between interpiece latencies and the perceptual chunks: What evidence is there that pauses are associated with retrieval of new structures?

Longer latencies are associated with fewer interpiece chess relations. The lowest latencies occur for pawn formations (PCS and DPCS) and for pairs of rooks or pairs of knights that mutually defend each other (DCS). The other relation that occurred much more than chance was that of adjacent pieces that have a defense relation (DPC), although these latencies are relatively long. It seems clear, however, that if there is a long pause in the recall, the pieces are not likely

to be closely related. If the hypothesis that time intervals of 2 seconds or more correspond to boundaries between chunks is correct, the chess relations with latencies greater than 2 seconds ought to look like chance occurrences, whereas the relations occurring within 2 seconds ought to show even more structure. Examination of the memory data partitioned into relations for latencies less than (or equal to) 2 seconds, and chess relations for latencies greater than 2 seconds shows that the hypothesis is essentially correct.

For the long pauses, the only relation that is considerably above chance is that of adjacent pieces with a defense relation (DPC). Apparently, a chunk isn't retrieved from memory completely at random. Subjects use the partially constructed board to retrieve new information and the new information often consists of the DPC relation. Also it is clear from the subjects' verbal reports and from watching subjects that the overall recall pattern is systematic, e.g., counterclockwise or clockwise recall, and that local proximities are very important.

A second hypothesis is that the short and long time intervals of the memory task have the same meaning as the within- and between-glance distinctions, respectively, of the perception task. The similarity of these patterns becomes evident when we lay the probabilities side by side and contrast them with the probabilities of their occurrence by chance. There are some slight differences between the perceptual and memory probabilities, but these differences are everywhere small compared to their differences with chance probabilities. A matrix of correlations shows two clusters: First, the within-glance probabilities (perception task) from actual game positions are highly correlated with the probabilities for the short pauses in the memory task, and the within-glance probabilities from random games are moderately correlated with these two. Second, the between-glance probabilities in random positions, between-glance probabilities in game positions, probabilities for long pauses of the memory task, and chance probabilities are all highly intercorrelated.

On the basis of these data, it is reasonable to conclude that the time intervals in the two variants of the experiment, perceptual and memory, have basically the same information processing significance. The processes that occur during an interval of more than 2 seconds between the placing of two pieces appear to be significantly different from the processes that occur during an interval of less than 2 seconds. Moreover, the nature of the differences in frequencies of relations in the two cases makes it reasonable, at least tentatively, to apply the term "chunk" to the set of pieces placed on the board in either experiment within the boundaries of a pair of long time intervals.

One final comparison between the perception and memory task concerns the chunk size. It appears that the chunks are about the same size in both perceptual and memory tasks, but that chess skill is reflected in the speed with which chunks are perceived in the perception task and the size of the chunks in the memory task.

Chunk Size and Memory Span

Having segmented the recall protocol into chunks, we now can test the hypothesis that recall is limited by the number of chunks that can be held in short-term memory. We interpret this hypothesis to mean that M's superior recall should be associated with larger chunks, but that the number of chunks should be a small constant within the memory span (7 ± 2) for all subjects.

One problem with this analysis must

be dealt with first: The recall protocols generally consist of two phases: an initial recall phase, followed by a reconstruction phase. The subjects generally placed first those groups of pieces they remembered well, then searched memory for additional pieces. During the first phase chunks tended to be relatively large and errors relatively few. During the second phase pieces tended to be placed one by one, time being taken for deliberation between pieces. Errors were relatively frequent, and in many instances the player appeared to be determining where pieces ought to be rather than recalling where he had actually seen them. This behavior was more true of M than the other subjects.

To avoid inflating our estimate of the number of chunks, we need a way of distinguishing the recall phase from the reconstruction phase. To identify the reconstruction phase, we adopted the criterion of an extremely long pause (10 seconds or more) followed by mostly errors, or a series of long pauses (5 seconds or more) with errors.

We observed, first, that the chunk size is related to chess skill for the first few chunks, but that this difference disappears in later chunks of the protocol. This relation is less true of the end-game positions, and chunks are also smaller for the end games. The middle game-end game difference simply reflects the fact that end games are less structured than middle games.

The gradual drop in chunk size during recall could be due to several things: It may be that subjects simply recall their larger chunks first. Recall, having an interfering effect on short-term memory, may cause large chunks to break up into smaller chunks as some of the relations are forgotten. Later chunks may be contaminated by some of the piece-by-piece reconstructions that are missed by our criterion; perhaps the first guesses are the best and are more likely to be correct.

The average number of chunks for each subject is well within the memory span, as hypothesized; but, contrary to our expectation, the number of chunks is related to chess skill.

Taken at face value, these data suggest that M achieves his superior performance by recalling both more chunks and larger chunks. But we know by the performance on randomized positions that M does not have a superior memory capacity.

Where, then, do these extra chunks come from? There are at least two possibilities: It may be that M does not store a small number of unrelated chunks in short-term memory; he may be able to organize the chunks on the board in some as yet undetermined way so that more chunks can be stored. Another possibility is that M is reconstructing part of the position from his general knowledge of such positions, and our criterion for these reconstructions doesn't pick up all these responses because they are more likely to be correct for M than for the other players.

In summary, the data on chunk size and memory span confirm the hypotheses that chunk size is larger for more skilled chess players, and that the number of chunks is within the memory span. However, the hypothesis that the number of chunks is invariant over different levels of chess skill is not supported.

Perceptual Chunks of a Chess Master

The sizes of successive chunks for the five middle-game and nine puzzle positions for trial 1 of the memory experiments were examined for subject M. The great bulk of the 77 chunks (two or more pieces within 2 seconds) in these 14 positions belong to a very

small number of types. Of the 77 chunks, only 17 couldn't be classified into the following three categories: pawn chains, castled-king positions, or clusters of pieces of the same color. These categories are not mutually exclusive since some chunks contain more than one category. The point is, however, that over 75 percent of M's chunks belong to only three types of chessboard configurations, all highly familiar and stereotyped.

One further analysis was carried out on M's protocols. From an examination of the chess relations, it appears that subjects were not attending to the attack relation as much as the defense relation. But a casual look at M's protocols indicated that some attacking pieces were clustered in his protocols.

Therefore, we analyzed the 14 middle-game and puzzle positions to find the strongest attacks; 18 such attacks were found, consisting mostly of pieces attacking the opponent's king position. Of these 18 attacks, 11 were chunked in M's protocols, in the sense that at least two of the attacking pieces appeared within the same chunk; rarely did the attacked pieces also appear in the same chunk with the attackers.

Thus, it appears that two kinds of attacks get chunked. The first kind is a fortuitous attack characterized by an attack relation between two adjacent pieces. The second is more abstract and involves combinations of pieces of the same color converging, usually, on the opponent's king position. These attack chunks would also be stereotyped, often involving classic maneuvers against a stereotyped defensive position. M would be able to recognize all these chunks provided that he has stored in long-term memory a modest vocabulary of variant patterns for each of a half dozen types of configurations.

Thus, we can account for M's performance in recalling positions he has seen for 5-seconds if we postulate that he has a short-term memory of average capacity, but a long-term memory capable of recognizing: a variety of chunks consisting of pawns; a variety of chunks consisting of common first-rank configurations; a variety of chunks consisting of common pawn chain, rook pair, and rook and queen configurations; a variety of common configurations of attacking pieces, especially along a file, diagonal, or around an opponent's castled-king position.

By confronting chess players of varying strength with a perception task and a memory task, we have shown that the amount of information extracted from a briefly exposed position varies with playing strength.

By measuring the time intervals between placements of successive pieces when the subjects attempted to reconstruct the positions, we were able to identify the boundaries of perceptual chunks. The data suggest that the superior performance of stronger players derives from the ability of those players to encode the position into larger perceptual chunks, each consisting of a familiar subconfiguration of pieces. Pieces within a single chunk are bound by relations of mutual defense, proximity, attack over small distances, and common color and type.

Condensed with permission from *Cognitive Psychology*, 4(1):55-81, 1973. Copyright 1973 by Academic Press, Inc. Reprints of original article from William G. Chase, Ph.D., Department of Psychology, Carnegie-Mellon University, Pittsburgh, Pa. 15213

Hypothalamic and Midbrain Neural Pathways Involved in Eating, Drinking, Irritability, Aggression, and Copulation in Rats

George Paxinos and Dalbir Bindra

In the past few years many investigators have sought to delineate the neural pathways which mediate hypothalamic influences on species-typical actions in the rat. The study reported here is one in a series designed to extend the knowledge on the neural pathways of motivation.

Experiment 1: Medial and Lateral Hypothalamus

Connections between the medial and lateral hypothalamus are important for eating, irritability, and copulation. The critical mediolateral connections for eating are those around the anterior tips of the ventromedial hypothalamic nuclei. No comparable localization has been made for the critical mediolateral connections that concern irritability and copulation. Nor is it known whether the various behavioral effects are mediated by the same or anatomically overlapping neural systems. This experiment investigated the effects of small parasagittal cuts placed at three anterior-posterior locations on eating, drinking, irritability, aggression, and copulation.

Tests for aggression, copulation, and irritability—A mouse was placed in each rat's cage on alternate days for 10 minutes and the number of bites and instances of killing were recorded. Each rat was given 48 weekly copulation practice trials. Then three preoperative and three postoperative 40-minute copulation tests were given and the following measurements were taken: mount latency and number of mounts per ejaculation; intromission latency and number of intromissions per ejaculation; ejaculation latency and number of ejaculations during the 40-minute test. If after the second or third postoperative test the male did not ejaculate, an effort was made to revive its responding by pinching its tail, changing the female, or making it fight with another male in the presence of a female. Irritability scores were obtained daily for 1 week before and 3 weeks after surgery, using a four-category scale: biting reaction to presentation of a pencil; biting reaction to presentation of a gloved hand at the top of the open cage; biting reaction to a gloved hand that pushed the rat against the cage wall; and vocalization during the preceding two tests.

Surgery—Parasagittal anterior cuts were made in eight rats, parasagittal middle cuts were made in seven, and parasagittal posterior cuts in five. The knife consisted of cannula bent at one end in such a way that tungsten wire forced through the cannula would extend in the direction of the curved end. Twelve rats served as pooled controls; in five of these the cannula was lowered in the same region as in the rats with the parasagittal cut; in the remaining seven the cannula was lowered as in the rats with cuts in the medial forebrain bundle or midbrain.

Food intake, water intake, and body weight—The parasagittal anterior group after surgery ate less—dropping from the presurgery mean of 28 gm/day to a mean of 22 gm/day, drank roughly the same, and stopped gaining weight. The parasagittal middle group after surgery ate about 30 percent

more and drank twice as much compared to its presurgery values; its rate of weight gain was doubled. The parasagittal posterior and control groups showed no noticeable change in the amounts eaten or drunk, or in the rate of weight gain.

Irritability and aggression—Irritability was markedly evident in the parasagittal middle group but was barely detectable in the parasagittal anterior or parasagittal posterior group. Thus, this experiment found the same area that is critical for hyperphagia and hyperdipsia—the area around the anterior tip of the ventromedial hypothalamic nuclei—to be critical for irritability as well. The hyperphagia and irritability syndromes, however, are probably not subserved by the same neural or hormonal factor, as there was no significant correlation between degrees of hyperphagia and degrees of irritability.

The amount of vocalization did not change as a result of the operation, nor did aggression, as measured by the amount of mouse biting and killing.

Copulation—The parasagittal anterior group was the most severely affected—five out of seven rats did not ejaculate postoperatively. The parasagittal middle group showed some ejaculatory potency. It is possible that the impairment observed in the parasagittal middle group resulted from that portion of the cut that lay lateral to the posterior one-third of the anterior hypothalamic nuclei.

This experiment confirms that the cut responsible for the disinhibition of eating and irritability lies lateral to the anterior half of the ventromedial hypothalamic nuclei and intrudes into the anterior hypothalamic zone, whereas the cut responsible for sexual impairment is located just lateral to the medial preoptic-anterior hypothalamic continuum.

Experiment 2: Medial Forebrain Bundle

This experiment investigated the effects of anterior and posterior coronal medial forebrain bundle cuts on the same behaviors studied in Experiment 1. The rats were treated in the same way as the rats of Experiment 1 except for the surgical operation. The data from the control rats of Experiment 1 also were used as control data in the present experiment.

Six rats were subjected to bilateral coronal anterior medial forebrain bundle cuts, and six received similar cuts in the posterior medial forebrain bundle.

Food intake, water intake, and body weight—There were no significant differences between the two medial forebrain bundle and control groups in amounts eaten, drunk, or rates of weight gain. The data yielded no evidence that a pathway inhibitory to eating travels through the ventral posterior medial forebrain bundle. Nonetheless, the dorsal medial forebrain bundle and the subfornical zone remain to be investigated.

Irritability and aggression—Except for one rat with posterior medial forebrain bundle cuts, there does not seem to be evidence that a pathway involved in the inhibition of irritability passes through those portions of the medial forebrain bundle that were cut in this experiment. Vocalization scores and levels of aggression against mice did not change.

Copulation—While the anterior medial forebrain bundle group was not impaired sexually, the posterior group was markedly impaired, dropping from a mean of 3.0 ejaculations per test preoperatively to a mean of .7 ejaculations per test postoperatively. Together, experiments with knife cuts, with lesions, and with stimulation indicate that pathways involved in sexual behavior pass mediolaterally from

(or to) the medial preoptic-anterior hypothalamic continuum, and then caudally through the ventral posterior medial forebrain bundle

Experiment 3: Midbrain

This experiment investigated the effects of coronal cuts in the central gray reticular formation and red nucleus on eating, drinking, irritability, aggression, and copulation. The rats were treated in the same way as the rats of Experiment 1 except that the knife cuts were placed in the midbrain.

Food intake, water intake, and body weight—The group with cuts in the central gray ate, drank, and increased in weight significantly more than the control group. One rat with reticular formation cuts postoperatively ate about 30 percent more food, drank about 15 percent more water, and more than doubled its rate of weight gain. The remaining three rats with reticular formation cuts did not change amounts eaten, drunk, or the rate of weight gain. One of the red nucleus group rats lost some weight postoperatively, whereas the other four animals of this group did not show a noticeable change in amounts eaten, drunk, or in the rate of weight gain. The finding of slight hyperphagia and obesity following central gray cuts agrees with work of prior experimenters. The hyperphagia in one of the rats with reticular formation cuts is puzzling, especially since there was no indication that the cuts had intruded into the central gray.

Irritability and aggression—Two rats with red nucleus cuts occasionally bit the gloved hand postoperatively; no other rat with midbrain cuts did so. No noticeable change in the amount of vocalization or aggressive responses against mice resulted from the operation. One rat with red nucleus cuts was hyperkinetic for the first 2 weeks postoperatively.

Copulation—One rat with central gray cuts had fewer ejaculations postoperatively, while the other seven rats showed no change. The reticular formation group postoperatively achieved less than half the number of preoperative ejaculations. The hyperphagic rat of this group did not ejaculate postoperatively. None of the red nucleus rats was impaired sexually. The decrement in sexual behavior in the reticular formation group could be due to the interruption of either sex-response related pathways or sexual arousal systems.

It may be useful to outline the general picture that has emerged concerning the neural pathways mediating the various species-typical actions studied.

Eating—The way in which ventromedial hypothalamic nuclei activity suppresses eating is not yet fully elucidated. A pathway that inhibits eating seems to exit (or enter) the ventromedial hypothalamic nuclei in a rostrolateral direction. The localized parasagittal cuts of Experiment 1 showed that hyperphagia could result from cuts lying lateral to the anterior tips of the ventromedial hypothalamic nuclei and intruding slightly into the anterior hypothalamic zone. After exiting from the ventromedial hypothalamic nuclei, the course of this inhibitory pathway is not clear. Research suggests that perhaps some of the inhibitory influence from the ventromedial hypothalamic nuclei does not simply modulate the lateral hypothalamic neural activity but proceeds to influence more caudal areas.

Hyperphagia often results from cuts or lesions in the midbrain central gray. While the hyperphagia produced by midbrain interventions may not be re-

lated to the hyperphagia resulting from hypothalamic interventions, it is nevertheless conceivable that the midbrain operations resulted in hyperphagia by interrupting a hypothalamic output that suppresses eating or by interrupting an inhibitory or excitatory ascending influence destined for the lateral or medial hypothalamus, respectively. More midbrain experimentation is necessary to define the areas that mediate hyperphagia and aphagia. This could be done by placing coronal cuts through the dorsal reticular formation, ventral reticular formation, medial lemniscus, and ventral tegmental area, and midsagittal cuts through the supramammillary and tegmental commissures.

Drinking—The hyperdipsia observed in the rats can probably best be accounted for by damage to the antidiuretic hormone system, increase in food intake, or both.

Irritability—Experiment 1 showed that the cut responsible for the disinhibition of irritability (as well as eating) lies lateral to the anterior ventromedial hypothalamic nuclei and intrudes slightly into the anterior hypothalamic zone. The experiments with the medial forebrain bundle and midbrain cuts failed to indicate extension of the hypothesized inhibitory pathway laterally from the ventromedial hypothalamic nuclei.

Aggression—Ventromedial hypothalamic nuclei lesions induce mouse killing in about 35 percent of the rats which do not kill spontaneously, but our experiments did not find any neural pathways that mediate this ventromedial hypothalamic nuclei lesion effect. Spontaneous mouse killing was rarely evident in this experiment. The same factor(s) that suppressed spontaneous killing might have suppressed killing that could have occurred following cuts. Under experimental conditions more favorable to killing, the disinhibition of killing induced by ventromedial hypothalamic nuclei lesions might be shown to be mediated through mediolateral connections.

Copulation—In Experiment 1 it was found that the portion of the parasagittal cut responsible for the suppression of copulation lies immediately lateral to the medial preoptic-anterior hypothalamic continuum. Experiment 2 showed that the ventral posterior medial forebrain bundle, but not the anterior medial forebrain bundle, is necessary for normal mating, suggesting that the continuum may have a caudal output or an input from caudal regions. In Experiment 3, reticular formation cuts partly suppressed copulation, implicating this portion of the midbrain in the control of sexual behavior.

In conclusion, it appears that some medial hypothalamic nuclei are critically involved in the control of eating, irritability, and copulation. Their involvement may be excitatory, as in the case of the medial preoptic-anterior hypothalamic continuum on copulation, or inhibitory, as in the case of the ventromedial hypothalamic nuclei on eating and irritability. The medial nuclei exert their effects through their lateral connections with the lateral hypothalamus and those components of the medial forebrain bundle that descend upon the lower brainstem sensory-motor systems.

Condensed with permission from the *Journal of Comparative and Physiological Psychology*, 82(1):1–14, 1973. Copyright 1973 by the American Psychological Association, Inc. Reprints of original article from George Paxinos, Ph.D., Department of Psychiatry, Yale University School of Medicine, 34 Park Street, New Haven, Conn. 06508

The Use of Modeling to Increase Independent Behavior

Arnold P. Goldstein, Jan Martens, o Hubben, Harry A. van Belle, Wim Schaaf, Hans Wiersma, and Arnold Goedhart

Modeling procedures have been shown to be an effective, reliable, and rapid technique for developing new responses and strengthening or weakening of acquired responses. Yet, their systematic use and evaluation in clinical contexts has been minimal. In response to this discrepancy between successful laboratory demonstration and the relative absence of clinical application, these investigations were undertaken.

Experiment I: Independence Modeling

Ninety outpatients at a public psychiatric clinic were randomly selected from a larger pool of clinic patients. Half were male, half female. Patients were randomly assigned to three experimental conditions: independence modeling, dependence modeling, and no modeling control.

Our stimulus materials consisted of 50 tape-recorded situations involving two persons. Examples of the situations and the response alternatives are:

You and your husband (wife) are standing before the closed front door of your house. You are looking for your keys. Your husband (wife) says to you:

Why did you have to lose the keys now!

Independent response alternative: Well, where are *your* keys?

Dependent response alternative: Do you remember where I put them?

A friend asks you to go downtown to buy a special present for her mother. However, you buy a different present because the one she wanted is sold out. She says to you:

I think it's rubbish!

Independent response alternative: Then you should have gone yourself.

Dependent response alternative: I'll change it for you.

The procedures involved first providing the patient with the following instructions:

We have asked you to come in for a routine investigation in which every patient will participate. It will be important for you, but we will benefit from it as well, because it will give us information about the effectiveness of our methods. We will describe several everyday situations. We would like you to respond by telling us what you would say if you were in such a situation.

An example would be: It is Friday afternoon and you are about to go home from work. Your boss appears and says: "We've just received some work we didn't expect. It must be completed. Everybody will have to work overtime." The tape will then say: "What is your answer?" When you hear that, we ask you to say what you would say in reality. You could for instance say: "Couldn't you have said this a little sooner. I already have an appointment for tonight." or "O.K., what do you want me to do?," or whatever you would want to say. You should only give the answer you yourself would give.

Fifty situations were then presented in three experimental phases.

Base rate (*Situations 1–10*)—All patients heard the first 10 descriptions and responded in terms of whatever they felt they would say in real life.

Modeling (*Situations 11–40*)—Control group listened to the 30 situations, after each of which they were presented with a card on which was typed two response alternatives, one independent and one dependent, and were asked to read the one which represented what they felt they would actually say. Patients in the independent-modeling condition heard the same 30 situations, but in 20 of these situations they also heard a rewarded model (patient of the same sex as the patient) state an independent response. On the remaining 10 situations, the patients were presented with the two response alternatives and chose that alternative which repre-

sented what they would actually say. When their choice was the independent alternative, the examiner responded with appropriate social reinforcement. Choice of the dependent response elicited no reinforcement. Parallel procedures were implemented in the dependent-modeling condition, with dependent responses being modeled and reinforced.

Posttest—This phase was identical to the pretest phase. All patients provided free responses to each situation.

The findings indicate a significant effect for independence modeling as compared to no modeling for both male and female patients. Dependence modeling also led to significant increases in dependent responses for female patients, but not for male patients.

Experiment II: Trait Structuring of the Model

Attention has been paid in the laboratory to modeling-enhancers, i.e., characteristics of the observer which augment the level of vicarious learning and performance. We sought to determine if trait structuring of the model would increase observer modeling when the observers were psychiatric patients and the research setting a clinical one. The clinical setting, screening, inclusion and exclusion criteria, diagnostic distribution, and recruitment procedures were the same as in Experiment I.

Our experimental design was 2 × 3 factorial (plus control) in which were represented patient sex and trait structuring (warm structuring and independent model, cold structuring and independent model, no structuring and independent model). Twenty patients (10 male, 10 female) were randomly assigned to each of the three trait structuring and modeling conditions. In addition, we included Experiment I's no structuring-no modeling control group. Procedures involved the same sequence as Experiment I with two exceptions. First, only independence modeling was provided. Second, after the 10 base-rate situations, but before exposure to the model, patients were provided the following trait structuring regarding the model.

Warm structuring:

> Now we'll do it in a slightly different way. In what follows you will again hear some situations, but you will not always have to answer. Sometimes the tape will give the answer for you. The answers you will hear are given by a patient who has been successfully treated. People who know him well all consider him a very sympathetic and outgoing person, someone with a warm personality. You'll probably also notice this when you hear his voice on the tape. Be sure to listen carefully to the answers this patient gives.
>
> However, answers will not always be given on the tape. In some situations we would again like to have the answer that you would give. But this time you do not have to respond in your own words. We will give you a card on which there are two answers. You will have 15 seconds to choose that answer which looks most like the answer that you would give in such a situation.

Cold structuring: Instructions were the same, except that patients were told:

> People who know him well all find him aloof in social interactions, a rather unsympathetic person, someone with a rather cold personality. You'll probably also notice this when you hear his voice on the tape.

"No structuring" patients were provided the same information about the tape and response procedures, heard the same modeling tape, but were not provided structuring of the model.

Both the warm structuring-independence modeling and the no structuring-independence modeling conditions increased significantly more in independence than did control group patients. This finding held for males and females separately and in combi-

nation. No significant difference emerged between the cold structuring-independence modeling and control conditions.

Experiment III: Instructions in Independence

Instructions regarding the desirability and explicit nature of the behavior to be modeled is a second modeling-enhancer with laboratory roots and potential clinical relevance. Experiment III was undertaken to test the predictions that: our independence-modeling procedures would lead to heightened independence in a psychotic inpatient sample; this modeling effect would be enhanced by providing such patients with prior instructions regarding the nature and value of independence modeling; it also explored the effect upon patient independence of such instructions operating alone, with no subsequent behavioral modeling of independence.

Our patient pool consisted of those patients in the most chronic male ward in a large mental hospital. The chief psychiatrist and two ward psychiatrists selected 54 patients who in their judgment would be able to participate in the experiment. These patients had a primary diagnosis of schizophrenia. All had been hospitalized at least 8 years.

Patients were randomly assigned to four experimental conditions: modeling and instructions, modeling, instructions, and no modeling-no instructions control. With two exceptions, materials and procedures were identical to that used for independence modeling in Experiment I. After the 10 base-rate situations, the following instructions were provided patients assigned to the first and third conditions and those in the first condition also received the usual modeling procedures, patients in the third condition received these instructions only:

> In a research project it was found that people who find it difficult to have contact with others gave weak and dependent answers, but when they could act more independent it was easier for them to be with people and have real contact with them. Another research project showed that people who were shy felt much happier after learning in therapy to give more independent answers in difficult or embarrassing situations.
>
> This means that if someone gets in an unpleasant situation, such as being accused of something he did not do, he should not pipe down, but should stand up for his rights and not let himself get pushed into a corner. For example, if your boss tells you at 5:00 that you have to work overtime, and you answer: "You should have told me that earlier, now I have an appointment for tonight." That is an independent answer. Or, as another example, if you have worked hard all week and you want to go to bed early, but a friend comes to visit and stays on and on, you tell him: "I'm sorry but I'm tired and want to go to sleep. Come back another time." That would be another typical independent answer. If you had said nothing, and waited till he had gone by himself, that would be a typical dependent act. This research shows us that it is good for people with problems like you may have to give independent answers in the following situations.

Patients in each of the three experimental conditions increased in independence significantly more than no instruction-no modeling control patients. While instructions alone also yield a significant increase in independence, the results are such that we do not have evidence for a modeling-enhancement effect.

Condensed with permission from *Behaviour Research and Therapy*, 11(1):31–42, 1973. Copyright 1973 by Pergamon Press. Reprints of original article from Arnold P. Goldstein, Ph.D., Psychology Department, Syracuse University, Syracuse, N.Y. 13210

Simulated Public Speaking and Anxiety

Steven Lipper and Douglas M. McNair

Researchers have been concerned with developing a laboratory model of clinical anxiety because such a model could make it possible for nonpsychiatric populations to participate in evaluations of antianxiety treatments.

This study was conducted to determine whether simulated public speaking induces physiologic reactions and subjective feelings consistent with a specific construct of anxiety, as distinguished from such other constructs as arousal, activation, general emotionality, or cognitive activity. Accordingly, simulated public speaking performances were compared with four control conditions involving a graded series of similar cognitive and psychomotor components. One hypothesis was that more palmar sweating and more intense subjective anxiety would occur during simulated speechmaking than during the control conditions. Instead of a global arousal rating, the study also measured tension-anxiety and other aspects of activation, separately. The second hypothesis was that subjective anxiety, but not activation, would increase during speechmaking.

The subjects were two male and six female personnel of the Boston University Medical Center. Median age was 32 years. They were informed about the specific procedures immediately prior to participation in each of five conditions, and they knew the aims were to compare palmar sweating and subjective feeling during a number of tasks.

Palmar sweating was measured by finger sweat prints which were obtained by the tape-band technique.

There were two rating scale measures: One was the Tension-Anxiety factor from the Profile of Mood States.

Three other adjective scales were included to measure intensity of feelings which appeared to be relevant to the task and to generalized activation. These scales measured the extent to which subjects felt alert and wide awake, interested, bored and disinterested. The "Activation" score was the total score on the three scales (with "bored and disinterested" weighted negatively).

Each subject participated in five conditions, administered approximately 1 week apart. During the first (Pretask) and third (Posttask) periods of each condition, sweat prints were taken while subjects remained seated and silent. Sweat prints also were obtained during the second period (Task) while subjects engaged in a different activity in each experiment. Immediately after each sweat print, the subjects completed the adjective scales describing their feelings during the 2-minute period. Table 1 presents the five tasks and the sequence in which they were conducted.

The reading material consisted of a travel page from a newspaper. The subjects were informed that reading speed was unimportant and that there would be no tests on content.

During all Pretask and Posttask periods and during the Task periods of Conditions 1–3, the examiner sat quietly to the side of the subject. The examiner left the room during Condition 4. During the Pretask period of Condition 5, the subjects were asked to select a topic and plan to talk for 2 minutes while pretending to address a large audience. Prior to the Task, a tape recorder was turned on just before the subject stood and spoke.

Pretask period—The mean sweat

Table 1. Tasks Involved in the Five Conditions

Condition	Task	Subject's position	Experimenter present?
1	Silent reading	Seated	Yes
2	Silent reading	Standing	Yes
3	Oral reading	Standing	Yes
4	Oral reading	Standing	No
5	Public speaking	Standing	Yes

print densities and Tension-Anxiety and Activation ratings for each time period within each condition indicated that Condition 5 differed significantly from the other four conditions. Increased palmar sweating was associated only with anticipation of speechmaking. Tension-Anxiety mood ratings while anticipating speechmaking also were significantly higher than for the other four conditions.

Task period—Sweat print differences among conditions was highly significant. There was more palmar sweating during speechmaking than during any of the other tasks. In addition, the sweat print means for Conditions 3 and 4 were significantly higher than for Conditions 1 and 2. More palmar sweating accompanies reading aloud than reading silently. Posture during silent reading and the presence or absence of an observer during oral reading had no effect.

When sweat print densities during each Task period were compared with the Pretask and Posttask periods for the same condition, a significant elevation occurred with every task (though the increase was much greater for speechmaking). However, only during speechmaking was Tension-Anxiety also significantly elevated as compared with the Pretask and Posttask periods. All tasks, then, produced increased palmar sweating, but only simulated speechmaking was associated with both increased palmar sweating and elevated anxiety.

Posttask period—After simulated speechmaking, there were marked mean decreases in both the sweat print densities and Tension-Anxiety ratings. On both measures, however, the means remained significantly elevated after speechmaking as compared with the other four conditions. Apparently some residual anxiety remained after speaking.

Palmar sweating during speechmaking apparently reflected the associated subjective anxiety plus some unmeasured factors, because the other tasks also produced increased palmar sweating (though much less than speaking). Conceivably, either the anticipatory period or the residual period could serve as models of "purer" but less intense anxiety, because, during these times, neither the physiological nor the subjective indicants of anxiety appeared to be confounded by other influences. It appears that simulated public speaking does induce anxiety in normal subjects. Whether it will prove to be a useful model of clinical anxiety for such purposes as testing psychotropic drugs or other antianxiety treatments remains to be seen.

Condensed with permission from the *Journal of Experimental Research in Personality*, 6(2-3):237-240, 1972. Copyright 1972 by Academic Press, Inc. Reprints of original article from Douglas M. McNair, Ph.D., Psychopharmacology Laboratory, Division of Psychiatry, Boston University Medical Center, 700 Harrison Avenue, Boston, Mass. 02118

Relaxation Training Facilitated by Biofeedback Apparatus as a Supplemental Treatment in Bronchial Asthma

Margaret H. Davis, David R. Saunders, Thomas L. Creer, and Hyman Chai

Recently there has been interest in using biofeedback to teach people to monitor and control physiological functions. However, no attempts have been reported on the use of biofeedback as a treatment for asthma. This is surprising because of the success attained in modifying other patterns of maladaptive physiological responding and because of reports suggesting that asthmatics can monitor and control their attacks. Our purpose was to investigate whether biofeedback-assisted relaxation training was effective as a treatment for bronchial asthma.

Twenty-four subjects were selected on the basis of age and severity of asthma from the population of the Children's Asthma Research Institute and Hospital. Half the subjects were between the ages of 6 and 10, half between the ages of 11 and 15. The asthma severity criterion employed was whether or not a child was being administered maintenance doses of corticosteroids. Half of the subjects were categorized as severe asthmatics (receiving steroid therapy), with the remaining subjects considered as nonsevere asthmatics (not receiving steroid therapy).

The apparatus was a portable Bioelectric Information Feedback System (BIFS) machine whose function is to assist subjects to reach deep levels of muscle relaxation by means of analog information feedback. Electromyographic electrodes are applied to the skin directly over a particular muscle. In this study, the electrodes were attached to the forehead as research has indicated that this muscle is a reliable indicator of overall muscle relaxation or tension.

The sequence of events in the feedback system is: A preamplifier is used to amplify the bioelectrical signal generated in the muscle. The amplified signal is quantified and converted into a feedback signal. This signal is conveyed via headphones to a subject as a constant volume tone which varies in frequency as the muscle changes. In summary, the subject is able to "hear" his muscle tension, while being provided with the opportunity to manipulate it. The latter was accomplished by instructing subjects to try to "lower the tone." By a gradual shaping procedure, the sensitivity level of the machine was increased as a given subject improved in his ability to relax.

A Wright Peak Meter was utilized to measure reductions or increases in airway resistance as a function of the experiment. This device measures peak expiratory or maximum flow rate during the first .10 seconds of a forced expiration.

The Mood Adjective Checklist was employed to assess subjective change in mood states.

The subjects were divided into three groups of eight children each: Experimental Group I, Experimental Group II, and Control Group, with each group matched according to the age and asthma severity criteria. Experimental Group I received modified Jacobsonian relaxation training assisted by biofeedback, while Experimental Group II received routine Jacobsonian relaxation training without biofeedback. Members of the control group were provided assorted reading material and told to "relax."

The subjects all attended five 30-minute sessions. The experimental pe-

riod lasted 3 weeks and was divided into three phases: baseline period of 8 days, treatment period of 5 days, and posttreatment assessment period of 8 days.

Effect of Biofeedback Training

The primary finding was the significant difference between treatment groups of nonsevere asthmatics. These children showed, over five biofeedback-facilitated relaxation sessions, a reduction in airway resistance that was significantly greater than that evidenced by the control group. The subjects who received routine Jacobsonian relaxation training also showed improvement, but not to the extent demonstrated by the group who received the relaxation training facilitated by biofeedback. No significant differences were found between treatment conditions for the severe or steroid-dependent subjects. The finding that relaxation training, especially when facilitated by biofeedback, is more effective with those suffering from mild asthma than with those having severe asthma has important implications for those who may be contemplating the use of these procedures in the management of asthma.

There are no clear-cut explanations for the vast differences in pulmonary response to treatment between the severe and nonsevere subjects. It is likely that the extreme response variability displayed by the members of the severe group accounts for the lack of significant improvement in the group. However, it is possible that the degree of illness of the severe subjects eliminated chances for improved respiratory functioning on their part.

Relation to Age

Age had no effect on response to treatment in the case of either the severe or the nonsevere subjects. Another finding was the lack of a "generalizing" effect in peak expiratory flow rate improvement. In other words, pre- and posttreatment peak expiratory flow rate readings did not differ. It seems likely that, while reduction in airway resistance may have occurred in some children immediately following treatment, this improvement was not found at any time during the following week with the same children. This lack of generalization must be further investigated before it can be concluded that relaxation training, with or without biofeedback, has no long-term effect on symptom improvement in asthmatics.

Analysis of peak expiratory flow rate readings revealed one significant effect—interaction between "predicted peak flow" and age—in the nonsevere group. This is understandable since "predicted peak expiratory flow rate" is determined primarily on the basis of age and height. No such interaction was found with the subjects experiencing severe asthma. This disparity is probably due to the fact that, because of the corticosteroid drugs, subjects with more severe asthma are not ordinarily of a height comparable to other children of their chronological age, but their chest capacity is comparable. Thus, the peak expiratory flow rate scale may not be appropriate for the severe group of subjects.

Electromyographic Level and Peak Expiratory Flow Rate

Several interesting findings were suggested by the analyses of additional data. For example, the lowest attained electromyographic level of the subjects did not correlate significantly with either the positive or negative peak expiratory flow rate changes that resulted from any treatments. This was

the case with both the severe and nonsevere subjects. It is possible that some variable other than relaxation may have been operating to produce the positive peak expiratory flow rate change evidenced primarily in the biofeedback group and, secondarily, in the Jacobsonian group.

Session and Relaxation

When subjects were grouped according to severity and treatment conditions, with the nonsevere children, the biofeedback group "relaxed" most during the third session and the Jacobsonian relaxation group attained the greatest level of relaxation during the fifth session. With the severely asthmatic subjects, on the other hand, the biofeedback group exhibited the greatest level of relaxation during the fourth session, while the Jacobsonian relaxation subjects displayed their greatest relaxation level in their second treatment session.

Older and Younger Subjects

Further analysis involving the attained levels of the electromyograph indicated an effect of age level. Among the nonsevere subjects, the older children attained lower electromyographic levels during the biofeedback training. In the case of the Jacobsonian relaxation group, however, the younger subjects attained the lower electromyographic levels. Among the severe group, the opposite occurred.

Self-Reports

The final measure involved the self-reports of the subjects regarding their mood states before, during, and following treatment. An overall finding was the lack of significant changes between pre- to post treatment weeks in the mood state of all subjects. A more detailed analysis revealed a significant difference in the responses of some subjects to certain factors on the inventory. In general, the subjects considered as suffering from nonsevere asthma reflected negative mood states throughout all 3 experimental weeks. The children with severe asthma responded at a higher rate to the positive mood states. Several reasons may be suggested for these differences: It is possible that the corticosteroids may have produced euphoria or well-being. Furthermore, it may be that the more severely ill child has accepted his condition and stay at a residential center for asthmatics. Or perhaps severely asthmatic children have successfully denied the degree of their illness, and view their situation more positively, albeit less realistically. Finally, there is the possibility that a critical physiological difference exists between the severe and nonsevere subjects.Determining whether this difference among asthmatics does indeed exist requires, as with the other factors, more intensive research.

Condensed with permission from the *Journal of Psychosomatic Research*, 17(2):121-128, 1973. Copyright 1973 by Pergamon Press Ltd. Reprints of original article from Margaret H. Davis, Ph.D., University of Colorado, Boulder, Colo. 80302

After Ten Years: A Follow-Up Study of Comprehensive Vocationally Oriented Psychotherapy

Milton F. Shore and Joseph L. Massimo

Eleven years ago a program was set up to help adolescent delinquent boys who had left high school. The program was a community-based, short-term attempt to reach these youth by focusing on employment as an entree for remedial education and psychotherapy. Vocational placement, remedial education, and psychotherapy all were administered by one therapist. The services were initiated 24 hours after the boy left school and were individualized, intensive, and flexible, with stress on dealing with everyday activities. The program was kept independent of community agencies or schools, and the boys were not encouraged to return to school unless they chose to do so. Often, alternatives to the regular school were chosen and high school equivalency obtained. Evaluation revealed significant improvements in academic areas, personality structure, and overt behavior (legal status and job performance) when compared with an untreated group.

This 10-year followup is an attempt to see if progress has continued.

Detailed histories were obtained around jobs, marital status, education, and legal status. The data were collected by someone who was unknown to the program participants and unaware of the study's aims.

Eight out of 10 of the treated group seem to have made an adequate adjustment. Of those two in the treated group doing poorly, one is in a correctional institution and one in a State mental institution. Some of the boys have done extraordinarily well. In contrast, only two of the 10 control group boys have made an adequate adjustment. Although able to get along, neither of the two is doing extraordinarily well. Four of the control group have served or are currently serving jail terms for serious crimes; one is in a rehabilitation center. The treatment group continues to show fewer arrests than the untreated group. The treated group also shows a more stable job history.

The most significant finding over this 10-year followup is the minimal change in direction of overall adjustment in either group over the decade. Those who started doing poorly soon after the program began continued to do so, getting involved in progressively more serious trouble. Those doing well continued to show adequate adjustment with increases in wages and only minimal legal involvement.

It is clear that adolescent identity formation seems to form a foundation for later development. Adolescence may also be an opportune time for intervention. Appropriate short-term interventions, even in seriously disturbed adolescents, may have major significance for setting the roots of identity that will form the directions for future personality development. The results certainly suggest that we need to consider new techniques for reaching young people, especially those who drop out of school, techniques that are characterized by ingenuity and innovativeness.

Condensed with permission from the *American Journal of Orthopsychiatry*, 43(1): 128-132, 1973. Copyright 1973 by the American Orthopsychiatric Association, Inc. Reprints of original article from Milton F. Shore, Ph.D., Mental Health Study Center, National Institute of Mental Health, 2340 University Boulevard East, Adelphi, Md. 20783

Psychiatric Assessment of 30 Chronic Users of Cannabis and 30 Matched Controls

Michael H. Beaubrun and Frank Knight

Recent reports on cannabis have stressed the need for more information about its long-term effects on chronic users. Jamaica offers a particularly good opportunity to investigate such effects since the use of cannabis has been endemic for more than 100 years, its use is widespread in the lower socioeconomic classes, and there is little use of other drugs with the exception of alcohol and tobacco.

In 1970 and 1971 a team of anthropological field workers identified a representative sample of 30 chronic users of cannabis and 30 matched controls who agreed to remain in the hospital for 6 days and nights to undergo physical, psychological, and psychiatric assessment. The subjects were matched for social class, occupation, income, age, and sex. Chronic use was defined as daily use over a period of not less than 7 years. All of the subjects admitted to having smoked a minimum of three "spliffs" a day or its equivalent. A "spliff" refers to a mixture of tobacco and marihuana approximating the U.S. "joint" but of greater potency. The marihuana normally smoked showed a delta-9-tetrahydrocannabinol content ranging from 0.7 percent to 10.3 percent, with a mean of 2.96 percent.

Psychiatric examinations were conducted by two psychiatrists to whom the subjects were randomly assigned. The objectives of the psychiatric assessment were: to look for psychosis or abnormalities of mood, thought, behavior, or perception and to find any correlations of these with cannabis use; to supplement and check the information on the subjects' life histories; to investigate the personality correlates of smokers and nonsmokers in terms of extraversion and neuroticism; to examine the relationship of chronic smoking to arrests and conviction for crime, use of other drugs, and upward or downward social mobility as revealed by the life histories; and to examine the relationship between parental deprivation in early life and the use or nonuse of cannabis.

Five forms were used: a life history in narrative form; a general purpose psychiatric questionnaire precoded for computer use; a precoded mental status examination record; the short form of the Eysenck Personality Inventory; and a smoking history schedule that incorporated questions about attitudes toward cannabis use and opinions about its medicinal and other uses. Subjects were admitted to the hospital from Monday to Saturday and were requested not to smoke cannabis while in the hospital.

History of mental illness—Eight of the 30 smokers had a history of mental illness in their families while only two of the nonsmokers had such a history. Yet only one smoker and one nonsmoker had personal histories of mental illness; both had family histories of mental illness.

Alcoholism—Seven smokers and three nonsmokers gave family histories of alcoholism; four smokers and three nonsmokers were adjudged as having had problems with alcoholism in the past.

Hallucinations—Ten smokers reported having had hallucinatory experiences as compared with two nonsmokers, a significant difference. Of the smokers, more than half had had these experiences only once when they first

began using the drug.

Three subjects from one area of Jamaica reported a first-time visual and auditory hallucination of a little lady dancing toward them in a fear-provoking experience that sounded like an initiation rite. The experience seemed to be exciting as well as frightening, but the subjects knew that they had only to hold their ground and open their eyes wide for the vision to disappear.

Arrests—Ten smokers had been arrested at least once as compared with seven nonsmokers. Three of the smokers had been detained for possession of cannabis. On the whole the figures suggest no significant relationship between cannabis and crime. The relationship of smoking to repeated arrests was also investigated, but again the figures showed no significant difference.

Extraversion and neuroticism—Extraversion scores for smokers and nonsmokers were identical. On the neuroticism scale smokers had a mean score slightly lower than that of nonsmokers, but the difference was not significant.

Ward behavior—It was noted that the smokers were more affable and popular than the nonsmokers, though nurses and others on the ward were not told whether the subjects were smokers or nonsmokers and all of the examinations other than the psychiatric examination were conducted blind. Nonsmokers were more often identified as "neurotic" and were more often impatient or intolerant of ward routines and discipline. This effect may have been due to a difference in motivation. While all of the subjects were paid equally for their time and all seemed to value the opportunity for a physical checkup, the smokers also seemed motivated to prove that their practice was not harmful.

No significant abnormalities emerged from the mental status examinations.

Use of other drugs—The use of hard drugs is as yet virtually unknown among working class Jamaicans, and it was not surprising to find that no one in the study had ever taken any narcotics, stimulants, hallucinogens, or sedatives; the only drugs used other than cannabis were alcohol and tobacco. In every instance use of cannabis was preceded by cigarette smoking.

Amotivational syndrome—In view of the frequent reports that the use of cannabis leads to a loss of competitive striving and an "amotivational syndrome," particular attention was paid to the subjects' work records as revealed in their life histories and the general purpose psychiatric questionnaire. No significant differences in work record could be demonstrated between smokers and nonsmokers in this sample of fishermen, subsistence farmers, and unskilled or partly skilled manual workers. Perhaps a difference would have appeared if our sample had included more competitive groups.

Early life—An attempt was made to assess the quality of the subjects' early lives and to see whether parental deprivation in early childhood might be related to smoking or nonsmoking in later life. A scale of items indicating deprivation was drawn up, and interobserver reliability of the method of assessment was established. Deprivation scores in smokers and nonsmokers were found not to differ significantly.

Condensed with permission from the *American Journal of Psychiatry*, 130(3): 309-311, 1973. Copyright 1973 by the American Psychiatric Association. Reprints of original article from Michael H. Beaubrun, M.B., Professor and Head, Department of Psychiatry, University of the West Indies, Mona, Kingston 7, Jamaica.

Individualized Behavior Therapy for Alcoholics

Mark B. Sobell and Linda C. Sobell

Until recently, behavioral studies of alcoholism have emphasized classical aversive conditioning and neglected the instrumental nature of drinking. Seldom have attempts been made concurrently to train socially acceptable behaviors in the place of heavy drinking. Lack of generalization has been perhaps the most severe problem plaguing such studies, but it is a problem not unexpected if heavy drinking is considered to be an operant, i.e., controlled by its consequences. These consequences are usually absent in a treatment environment but are an integral part of our society.

Rationale of the Work Reported Here

Several studies using both animal and human subjects have investigated the hypothesis that a voluntary increase in alcohol consumption is associated with increases in stress. A behavioral approach to alcoholism which has been proposed but never developed into a full treatment design, considers heavy drinking of alcoholic beverages as an alcoholic individual's predominant learned response to a stressful, anxiety-laden situation. The response of drinking is conceived as having been acquired because the problem drinker has been rewarded, consciously or not, for such drinking. Among the possible rewarding consequences which could result from heavy drinking in a stressful situation are:

- Alcohol is an extremely effective sedative. By drinking, a person experiencing an aversive situation may significantly reduce the physiological components of that state. Once a drunken stupor has been reached there is little doubt that a complete, although temporary, escape from the aversive situation has been attained.
- Alcohol consumed in large quantities is physically debilitating, and during a debilitated state the drinker can avoid participating in situations which he finds unpleasant. Knowledge of this means of avoidance could lead a person to initiate a binge. At the very least, if the person is made to go through the aversive situation, the sedative nature of intoxication would reduce the magnitude of the accompanying anxious state.
- Alcohol intoxication is socially accepted as an excuse for engaging in otherwise inappropriate behaviors, such as extremes of flirtation, extremes of aggression, or homosexuality, which are generally considered socially unacceptable when engaged in by a sober individual, but are tolerated from a person who is drunk. Consequently, the opportunity to engage in these behaviors with minimal chastisement can act as a reinforcer for the drinking behavior.

Not all experimental studies have supported the stress-reduction hypothesis. In these studies, however, the subjects were volunteers from correctional institutions who probably had lower pre-experimental levels of stress and anxiety than the typical nonincarcerated alcoholic who is about to begin a drinking binge, and were aware that they would eventually have to "dry out" and return to institutional life.

Treatment Goals

Among professionals there is a predominant belief that excessive drinking of alcoholic beverages signifies a progressive disease which can be ar-

rested, but is irreversible. But contradictory evidence is mounting. There is an ever-increasing number of reports demonstrating that persons who were at one time "alcoholic" have been able to acquire a pattern of social, normal, or controlled drinking.

Persons working in the field of alcoholism, however, have been slow to accept these findings of successful drinking by former alcoholics.

As long as the objections of traditionalists to controlled drinking had been mentioned, the other side of the issue should also be explored. The question asked is how many persons consistently deny that they have a drinking problem until they have truly become chronic alcoholics—and how much is such a denial based upon a resistance to being condemned to abstinence for life?

Any effective form of therapy must consider the kinds of behavior which our society reinforces. If the goal of therapy is to be abstinence, then the patient must be prepared to identify with certain social groups (e.g., AA, certain religious groups, etc.) which reinforce nondrinking. If a patient cannot, or chooses not to identify with social groups supportive of abstinence, then the constraint of nondrinking might be a stressor for that patient. The majority of our society reinforces a pattern of moderate drinking. If controlled drinking is the treatment goal which is most practical and potentially beneficial for a given individual, it should be pursued.

The experiment reported here was designed in accordance with this rationale. Treatment sessions dealt directly with the inappropriate behavior of excessive drinking and emphasized a patient's learning alternative, more appropriate responses to stimulus conditions which had previously functioned as setting events for his heavy drinking. The treatment took into account the learning history of each individual patient and was specifically tailored to meet each patient's needs.

Description of the Study

Seventy male patients who had voluntarily admitted themselves for treatment of alcoholism and volunteered to serve in research studies were used as subjects. The staff interviewed each subject to determine his desire for treatment and which of the goals was most appropriate: nondrinking or controlled drinking. Those subjects who could identify with AA, who requested abstinence, and/or lacked outside social support for controlled drinking were assigned to nondrinking. Subjects who requested controlled drinking, had outside social support for such behavior, and/or had successfully practiced social drinking at some time were considered candidates for the controlled drinking goal. After a staff decision had determined a subject's treatment goal, the subject was randomly assigned to either a control group receiving only the conventional hospital treatment (large therapy groups, AA meetings, drug, physio- and industrial therapy) , or an experimental group receiving 17 behavioral treatment sessions in addition to the conventional hospital treatment.

All subjects had experienced some withdrawal symptoms, and had damaged their physical health, finances, and social standing. Thus all subjects could be classified as Gamma alcoholics. There were no differences between the experimental and control groups with the exception that nondrinker experimental subjects had a higher level of education than nondrinker control subjects.

The research ward contained the central research facilities, a simulated bar and cocktail lounge, and a simu-

lated home environment. The bar environment was equipped with a television camera which could be remotely controlled from an adjacent room containing videorecording apparatus.

The simulated home environment was located immediately adjacent to the bar and separated from it by heavy, floor-length draperies. It was carpeted and included a sofa, a love seat, a soft chair, two end tables with lamps, two coffee tables, a pole lamp, a television set, and a phonograph.

Operant conditioning equipment which independently controlled two shock generators was located behind the bar and could be operated by hand-held push button switches. The same shock equipment could be used in the home environment by attaching longer cables to the electrodes and switches. A variety of confiscated alcoholic beverages were supplied by the California State Alcoholic Beverage Control Board.

The 17 experimental sessions emphasized defining prior setting events for heavy drinking, and training the subject in alternative socially acceptable responses to those situations. The treatment was designed so that each subject's sessions could be tailored for specific setting events and alternative responses appropriate to his case. Stimulus control variables, or setting events, for drinking were defined as those factors which had immediately preceded or accompanied the onset of heavy drinking in the past. Intervening variables such as "depression" were not considered as stimulus controls for drinking unless the defining situations could be specified. A subject was always asked to generate a universe of alternative responses to each setting event and then evaluate each alternative for its appropriateness (effective as compared to self-destructive consequences) for the situation.

In all except probe sessions, inappropriate drinking behaviors were punished by electric shocks. An avoidance rather than escape schedule was used because of its potential for shaping self-control. Probe sessions during which drinks were available but shock contingencies absent made it possible to assess whether the drinking patterns demonstrated in shock sessions could be expected to generalize to situations not having immediate aversive consequences for inappropriate drinking.

When shock contingencies were in effect, nondrinker subjects occasioned a 1-second shock by ordering any drink. The drink was then served and subjects occasioned a continuous shock from the time they touched the glass until the time they released it (the drink could be consumed). Rules for controlled drinking were derived from data collected from social drinkers who had participated in experimental baseline drinking studies conducted in the simulated bar. Controlled drinker subjects occasioned a 1-second shock for the following inappropriate drinking behaviors: ordering a straight drink, taking a sip larger than one-sixth (mixed) or one-twelfth (beer) of the drink's total volume (glasses were demarcated), ordering a drink within 20 minutes of previously ordering a drink, or ordering any more than three total drinks. After consuming three drinks within a session, controlled drinker subjects were placed on the same shock contingencies as nondrinker subjects.

Sessions 1 and 2, drunk, videotaped —Taking advantage of the sedative effects of alcohol, staff members probed each subject for stimulus controls for the drinking response, discussed fear-laden topics, and evaluated the subject's verbal and nonverbal reactions to potentially stressful situations. These sessions demon-

strated to each subject that he could become drunk and sober up the next day without suffering from withdrawal symptoms or cravings for alcohol.

Session 3, education—The subject was instructed about: when and why shock contingencies would apply, the occurrence of probe (no shock) days, the treatment rationale—emphasizing that drinking is a learned behavior which occurs in certain stimulus situations and not in others and is controlled by its consequences, and a response repertoire for refusing alcoholic beverages—structured situations where subjects could practice resisting social pressures to drink were used. Additionally, controlled drinker subjects were trained in a response repertoire for mixed drinks.

During sessions 4 through 16, data were recorded for drinks ordered, infractions of controlled or nondrinking rules, shocks actually received, sips per drink, kinds of drinks ordered, and time between successively ordered drinks.

Sessions 4 and 5, videotape replay—Videotape self-confrontation of drunken behavior was used because it had been found to be stress inducing for sober alcoholics and had seemed to increase a subject's spoken motivation for changing his drinking behavior. More importantly, it served to demonstrate various behavioral deficiencies as well as various setting events to a subject.

Session 6, failure experience—Twenty minutes before the session a series of impossible to complete tests were administered to the subject who was then informed of his poor test performance. The therapy session concentrated on the way the subject had responded to failure experiences, past and present. All subjects were debriefed after the session.

Sessions 7 through 16, stimulus control—Emphasis was placed on: elucidating stimulus controls for heavy drinking, generating a universe of possibly effective alternative responses to those situations, evaluating the probable consequences of exercising each response, and practicing the most beneficial alternative responses under simulated conditions. When a nondrinker ordered no drink for two consecutive sessions during sessions 4 through 16, a priming prompt of a free drink was offered at the next session. If the subject consumed it, any applicable shock contingencies were reinstated. If he chose not to consume the drink, he had to pour it down the sink and this procedure continued at 15-minute intervals for the entire session.

Session 17, summary, videotape contrast—Selected replays of drunken behavior which occurred during sessions 1 and 2 were contrasted with videotape of sober behavior during session 16. The subject's progress was discussed and he was presented with a wallet-sized research program card which included a list of Do's and Do Not's specific to his treatment. He was encouraged to extend the principles of self-behavioral analysis and exercise alternative responses to all phases of his life.

In almost all cases, subjects chose to discharge from the hospital within 2 weeks after session 17. An in-depth interview was conducted before discharge, and after discharge continuous phone and personal contact was maintained with all experimental and control subjects. The following information was obtained over each followup interval: drinking disposition, vocational status, use or nonuse of therapeutic supports outside the hospital after treatment, evaluation by a collateral of the subject's general adjustment to interpersonal relationships and stressful situations as compared to

the year preceding his hospitalization.

Treatment Results

The results can be succinctly summarized: Male Gamma alcoholics treated by the method of individualized behavior therapy were found to function significantly better after discharge than alcoholics treated by conventional techniques. Differences between experimental and control subjects were found not only for drinking behaviors, but for other adjunctive measures of functioning as well. Moreover, subjects who clearly met the criteria required by most experts for classification as "alcoholics" were able to acquire and maintain patterns of controlled drinking. These findings directly contradict the concept of irreversibility of alcoholic drinking.

A treatment goal of controlled drinking is uncommon and creates certain problems of data evaluation. The criteria used to distinguish controlled drinking days from drunk days were derived from data collected on actual social drinkers who had participated in baseline drinking behavior studies and, thus, were not completely arbitrary. The baseline data, however, were obtained from single drinking sessions. If a longitudinal baseline study were conducted, normal drinking patterns would probably be found to consist of a major proportion of abstinent days, a certain proportion of controlled drinking days, and a small proportion of drunk days. Thus, any appraisal of how well the controlled drinking patterns acquired by some of the subjects approximated normal drinking behaviors must allow for a small proportion of drunk days. Furthermore, the extent of drunkenness typical, among normal drinkers is probably dependent upon socioeconomic status.

At times, many controlled drinker subjects who practiced controlled drinking successfully after discharge placed themselves on extended periods of abstinence. This self-imposed abstinence was not maintained by a fear of the supposedly unavoidable consequences of drinking. Instead subjects reported they were abstinent either because drinking now served no useful purpose, or because they were dealing with stress-inducing situations and believed drinking might interfere with their effective handling of those problems.

The generality of these results remains to be evaluated for other populations such as females and subjects from other types of socioeconomic backgrounds. Working with middle and upper class individuals may require dealing with different and perhaps more sophisticated alternative responses.

The findings are highly encouraging, but only on the basis of continued investigation and outcome studies can one develop an effective and efficient short-term treatment for alcoholism.

Condensed with permission from *Behavior Therapy*, 4(1):49-72, 1973. Copyright 1973 by Academic Press, Inc. Reprints of original article from Mark B. Sobell, M.S.W., Alcoholism Services, Orange County Department of Mental Health, 9842 West 13th Street, Santa Ana, Calif. 92703

Factors Influencing the Success of Applied Research

Edward M. Glaser and Samuel H. Taylor

Applied research is directed toward a search for new knowledge that can help solve problems encountered in meeting the needs of society. The expectation is that investigators, many of whom are more experienced in providing services than in carrying out research, will be capable of pursuing their objectives in a scientific manner. It also is expected that the new knowledge, insights, and techniques will be applied for the benefit of people, or will be cross-validated through further demonstration and evaluation.

There has been little systematic study to determine the degree to which these expectations are being realized. The scientific aims of projects sometimes have been outstripped by the need to provide services through the projects with a consequent softening or vitiating of conclusions. Even projects which report seemingly promising findings can adduce little evidence of the application of those findings.

In 1967 the Applied Research Branch of the NIMH conducted a study of projects funded by them. The purpose was to discover variables that may have been associated with *the degree of* success. Success meant that the project was directed to the original objectives or appropriate modifications; the results were embodied in a clear and cogent report, complete and candid enough to enable replication; and the findings were disseminated adequately.

The study reported here presents the results of a followup program conducted on 10 projects, five rated as very high and five rated as relatively low in outcome, the ratings of high and low being determined by the above criteria.

Seven projects were located within direct-service organizations or conducted their data collecting in cooperation with such organizations. Three were more independent, serving a nationwide constituency or being located within a university. Our principal research instrument was an interview schedule administered to key people associated with each project. These included the principal investigator, staff members, administrators, and persons who would be most likely to be utilizers of the findings.

The life cycle of a project was divided into six stages: the *idea, design* of the project including revisions, *funding,* conduct of the *research, findings* and their *dissemination,* and actual or planned *use* of the findings. For each stage, the primary focus was: What was done? What helped? What hindered or impeded progress?

Idea

Successful projects displayed a more receptive atmosphere and a more energetic solicitation of the reactions and contributions of administrators, practitioner-utilizers, experts, researchers, members of advisory groups, etc. during the early idea stage than did the less successful projects. This early involvement appeared to enlist support for the venture. The research idea was more likely to be relevant to issues of concern to the host agency in successful projects than in less successful ones.

In the more successful projects the researchers had contacted an impressive number of experts as well as administrators and practitioners, and they could document who had contributed particular ideas or refine-

ments. Successful researchers conducted more exhaustive explorations of both the theoretical and practical dimensions of their areas and transmitted a quality of genuine interest to other persons which served to elicit active involvement. In contrast, less successful researchers relied more on a handful of experts and exposed their early ideas to administrators, practitioners, and advisory groups more for the purpose of obtaining endorsement or access to potential sources of data rather than for the purpose of inviting critique.

Design

Successful projects usually were designed and written by the principal investigator who developed a "network" for two-way communication in the earlier idea stages. All projects reported some degree of involvement with other people during the design-formulation phase; the successful projects evidenced a more dynamic, issue-laden interaction which frequently led to conflict and the need for revisions and compromise. Successful projects continued their contacts with many persons and groups and became aware of complexities and obstacles when they received feedback from those with whom they had shared drafts of the proposals. In this way they could make modifications at an early stage, rather than being caught off-base by unanticipated problems when the research was under way. Further, the process of developing two-way communication and resolving conflict promoted a coping capacity that was valuable when problems were encountered later.

One might conjecture that less successful projects would report more conflict and "disabling" revisions of the design prior to submission for funding, yet this was not the case. The less successful projects were comparatively calm and uneventful. In other words, a clear and well-written design may be of limited value if this clarity is not linked to the concerns of people in the research environment. An untroubled and superficially harmonious beginning may be a poor augury. It may bé that people do not know nor care enough to raise issues during the early stages.

Funding

All projects reported concern about funds, and all reported modification in their applications, either in anticipation of a funding organization's interests or at the suggestion of the organization. Successful projects were more likely to have their grant augmented by financial or service contributions from host agencies.

Those projects started up with pilot studies reported that the pilot studies served to test out the workability of the design, to increase awareness of problems, to provide time for tooling up and recruiting personnel, and to aid in the preparation of a realistic budget.

Research

Successful projects solicited consultation, involvement, and expertise from many sources. The project's team members were encouraged to challenge all issues and procedures during the research. These projects were not only receptive to such inputs, but acknowledged their value and used them where appropriate. In contrast, less successful projects tended to discount, avoid, and discourage suggestions and critical reactions.

Characteristic of the successful projects was the involvement of a principal investigator with time and commitment to develop and maintain channels of two-way communication during the research. Usually this required a full-time or a substantial-time investment.

A challenge in both successful and less successful projects was maintaining the delicate equilibrium between a research orientation and the operational climate of the service agency. All projects felt that they were the targets of overt or covert sabotage. Practitioners in cooperating agencies often registered resentment about the status of the research staff, being treated as lesser colleagues, scanty communications concerning the research, and about the departure of the principal investigator after the data were collected without feedback or other quid pro quo to the cooperating staff. Successful projects showed more skill in dealing with these problems through small group discussions, use of consultants, and allocating enough time and energy to cope with the less apparent aspects of the situation. To some degree in all projects, principal investigators were so preoccupied with their research that they were unable to use the wider perspectives that might have resolved certain problems.

A critical distinction between successful and less successful projects was the behavior of the principal investigators. Successful principal investigators negotiated differences and attempted to clear up misunderstandings. In contrast, less successful projects became more insular and developed a form of "tunnel vision" wherein the researcher could only see his own involvement in research and failed to see the other person's situation or consider alternative courses of action.

Development and Dissemination of Findings

Personnel from all projects reported findings that were of value, and none felt that there had been any attempt to suppress findings. However, in their judgment no project achieved optimum dissemination, chiefly because no arrangements had been made for this phase of the research. Even so, the range was substantial, since projects rated as more successful had achieved impressive levels of dissemination in contrast to those projects rated as less successful.

The successful projects were more active and aggressive in using conventional channels for dissemination (journals, etc.) but, judging from the responses of administrators and practitioners, these channels were only moderately effective. Institutes, workshops, and presentations that encouraged *two-way* discussion were preferred methods of dissemination, and many respondents felt that such approaches would have been used more extensively if they had been facilitated by financial and consultative support.

When a project did not disseminate findings, this deficit could be attributed to the following reasons: there were no findings; there were potential findings, but the researchers resorted to what might have been unwarranted delays in formulating and presenting them; there were innovative findings, but they were controversial, irrelevant, ambiguous, or of dubious (or at least undemonstrated) potential benefit.

The successful projects were both prodded and solicited by involved persons in their network of communications to publish and make presentations regarding their findings. The less successful projects did not have such an informed and encouraging constituency.

Utilization

Projects rated as successful enumerated and identified more instances in which their findings were utilized by practitioners and researchers. However, many principal investigators were reluctant to take the initiative in promoting utilization; some felt that such activity was unprofessional.

Administrators reported that they tended to endorse or reject implementation, but ultimately it was the practitioners who determined whether the findings would be incorporated into practice. If the practitioners were involved in the development of the project, had good rapport with the research team, and if their responses to the findings were sought and heeded, then there was greater lieklihood that they would use the findings and that this endorsement also would be instrumental in promoting use of the findings in comparable agencies.

The concept of effective utilization need not mean acceptance or adoption of a total package. Typically, particular components or aspects of the findings were used according to agency needs. The open two-way approach which characterized effective dissemination also contributed to more widespread utilization, through special institutes, workshops, and other devices that permit clarifying of questions and dispelling of misgivings. Researchers, administrators, and practitioners all agreed that insufficient time, money, and skill had been allocated to utilization efforts.

Conclusion

Practitioners and researchers may have different value systems, orientations, and styles of thinking. Their training, professional goals, and organizationally assigned roles may be so different or even antagonistic that it is difficult to define a common ground for meaningful dialog. Since the reason for conducting research in a practice setting usually implies the need for cooperation and a unique vantage point for the inquiry, this is a serious problem which goes to the heart of applied research.

Anyone engaged in applied research within or in cooperation with an agency is thrown into a position of responsibility related to the structure of that agency. Therefore, it is incumbent upon the researcher to use appropriate organization and management theory and practice if he wishes to carry out the research and obtain an optimal level of utilization of findings. He should communicate with groups beyond those most proximate to the project itself. He should understand how bureaucracies function. He should utilize communication theory and practice to overcome obstacles and facilitate the development of an open, interactive climate.

These comments may discourage researchers who prefer to devote their energies to research rather than be distracted by other responsibilities. However, concern for the organizational environment and its functioning is relevant. This study indicates that ignoring it serves to reduce a project's chances for success. This does not suggest that the researcher must function as a public relations expert; it does imply that he ought to understand and be ready to relate competently to the organizational systems with which he works. Researchers who are unsure about their competence in relating effectively to a service organization might consider obtaining consultation. Further, funding organizations might consider trial programs wherein information dissemination consultants are made available to projects from their inception to determine if this brings about improved outcomes as well as better diffusion and utilization results.

Condensed from the *American Psychologist*, 28(2):140-146, 1973. Copyright 1973 by the American Psychological Association, Inc. Reprints of original article from Edward M. Glaser, Ph.D., Human Interaction Research Institute, 10889 Wilshire Boulevard, Los Angeles, Calif. 90024

An Examination of the Civil Rights of Mentally Ill Children

Leon H. Ginsberg

There are few American sociopolitical issues so complex as guaranteeing the civil rights of children. There is literature dealing with the rights of the mentally ill, but it is characteristically limited to the rights of adults. There is also literature on the rights of children, but it approaches "rights" from a different perspective; i.e., it exhorts governments to act on behalf of children.

This paper defines the American population of mentally ill children who face rights deprivations. It discusses the law dealing with the commitment of children to institutions and the procedural safeguards available to them. It also examines the rights of children within institutions for the mentally ill. Some revisions in practices that could lead to stronger legal protection of the rights of mentally ill children are proposed.

Who Are America's Mentally Ill Children?

Reliable statistics on mentally ill children are limited. Although one would assume that the resources of Federal, State, and local governments would yield data on questions so central as the number of children institutionalized as mentally ill, their ages, and diagnoses, it is difficult to find reports that are consistent with one another.

The digest of the final report of the Joint Commission on the Mental Health of Children says: "Our present data indicate that slightly over 27,000 children under 18 were under care in State and county mental institutions in 1966. On the basis of a trend that has been developing over the last few years, the National Institute of Mental Health estimates that by 1970 the number of children aged 10–14 hospitalized in these institutions will have doubled."

But a census conducted by the National Association of State Mental Health Program Directors, which gathered responses from 37 states, indicated that only 13,329 children under 17 were annually admitted to residential programs.

In a 1971 report, the National Institute of Mental Health said that there were 33,000 children in public and private mental hospitals and another 26,000 in residential treatment centers.

The Joint Commission also reports that "at least 10 million of our young people under 25 are thought to suffer from some mental and emotional disorders. It is estimated that .6 percent are psychotic and that another 2 to 3 percent are severely disturbed. An additional 8 to 10 percent are in need of some kind of help from knowledgeable persons." How did such an estimate come to be?

How many mentally ill children are there? How many are in institutions? Are the trends upward, downward, or stationary? It is difficult to say.

Age and Economic Characteristics

As others have reported, being defined as a mentally ill adult occurs with the greatest frequency among the lowest socioeconomic classes. The State Mental Health Program Directors' survey tends to confirm that chil-

dren defined as mentally ill come from the same classes. Unfortunately, the survey's definition of economic classes is not specified.

Detailed information on the ages of America's mentally ill children is not available, but of all the children under care, as reported by the State Mental Health Program Directors, the overwhelming majority—26,000 of 36,000—were at least 12 years old.

Diagnoses

It is important to know the kinds of problems or behavior that cause children to be considered mentally ill. Of course, mental health diagnoses are often inexact and variable.

But even the incomplete and undetailed data obtained through the State Mental Health Directors' survey are revealing. The States responding indicated that of the children in their care, 7067 were victims of psychotic reactions, 4840 of neurotic reactions, and 24,738 of behavior disorders.

Since the majority of the diagnoses were based on behavior disorders, it may be assumed that most of the reported behavior in mental illness among children results from conflicts between children and institutions such as their families or their schools. Although the specific problems were not reported, it is likely that many problems called behavior disorders are untolerated actions such as sexual contacts, running away from home, and truancy.

One may conclude from the available facts that mentally ill children who come to public attention are largely low-income adolescents whose behavior is disturbing to those around them. The civil rights protection of such a vulnerable group is of great importance.

Legal Procedures for the Institutionalization of Mentally Ill Children

Statutory laws governing the rights of all children, whether they are mentally ill or not, are few. Unike the law deaing with crimina charges against adults, there is no requirement that children be represented when their liberty is in question. Neither is there a requirement that the issues threatening their liberty be judicially determined, although children may now demand such rights in juvenile delinquency proceedings.

Because there has been only limited litigation on the personal rights of children, there are few laws governing children, including the mentally ill. And it is litigation that leads to law.

The general statutory authority that governs children is usually each State's juvenile court act. Such acts, again, apply to all children, neither singling out nor excluding mentally ill children.

Many courts that deal with children use loose procedures and exercise broad power. The Model Juvenile Court Act does not specify the legal rights of children. Neither does it specify the procedures a child may invoke for the protection of his rights or to redress wrongs against him.

In regard to the legal processes followed in institutionalizing mentally ill children, which are generally found in the statutes of the various States, the State Mental Health Program Directors' survey indicates that most States are less protective of the child's rights than they are of comparable adults'. For example, although many States permit trial by jury and representation by counsel, such rights are not always granted to children.

It seems that most States permit parents or guardians *voluntarily* to commit their children to institutions.

None specifies a process through which a child can contest his commitment. *Voluntary* refers to the inclinations of the parents and guardians, not necessarily to those of the child. Of course, public institutions need not accept children and may discharge children when their behavior indicates that the emotional problems have subsided or are under control. But the child does not voluntarily become a patient.

Remand by Juvenile Courts

Although it is not commonly reported as a mental health proceeding, some juvenile courts have and use the power to commit children to mental hospitals as one of the court's alternatives.

On some occasions juvenile courts waive children they consider seriously mentally ill to adult criminal courts. When they do so, it is because the juvenile judge thinks the child is too dangerous for juvenile institutions or will need treatment beyond the juvenile court age limits.

It can be argued that children whose cases are initially heard before juvenile courts but who are then waived to adult courts for mental health action should be entitled to the same protections against involuntary commitment as adults in the same State who face mental health commitments.

The Gault Decision (In re *Gault*, 387 U.S. 1, (1967))

The closest thing to a body of court precedents governing the rights of mentally ill children are the cases dealing with juvenile court procedures. The most important children's rights court decision in recent years dealt with the matter of Gerald Gault.

Gault was an adolescent living in Arizona. He had been subject to a juvenile court's probation because he was in the company of an older boy when a woman's purse was stolen. He was later charged with making obscene statements to a woman over the telephone, which again brought him before the juvenile court. Through normal juvenile court procedures (no records kept, no charges specified, no jury—no procedures of the criminal court), the boy was sentenced to an institution for young offenders until his 21st birthday, a sentence of 6 years for a crime that would have cost a convicted Arizona adult no more than a $50 fine and 2 months in prison. The case was appealed ultimately to the U.S. Supreme Court, which reversed the decision and, in the process, guaranteed Gault and all other juveniles some of the due process rights normally guaranteed by the Constitution to adults in criminal proceedings.

Thus far, the extension of these rights applies only to children in juvenile court proceedings, not to children facing mental health commitments. However, the Gault decision could be used as the basis of appeals in mental health hearings.

The Gault decision raises a variety of questions. Can parents be forced to pay for their child's attorney? Does the attorney represent the child or the parents when the two do not agree? Are most attorneys familiar with the Gault case?

But whatever the implications, the Gault decision promises to influence the commitment of children defined as mentally ill. How soon this impact will be felt and what it will be depends upon several factors, among them how soon a valid test case attempting to obtain constitutional protection for a child facing mental health commitment is taken to court.

Administrative Procedures Leading to Loss of Liberty

Courts have also hinted that children faced with administrative procedures leading to the loss of their liberty could be entitled to the constitutionally guaranteed procedural safeguards. However, an appeals court in the case of *Madera* v. *the Board of Education of New Yorw City* (386F 2nd 778 (1967)) overturned a lower court decision that said that a child's civil rights must be preserved in a preliminary hearing because that hearing could lead to other proceedings that could in turn lead to the child's loss of freedom.

In the Madera case, a 14-year-old pupil was suspended for misconduct. A teacher subsequently charged him with juvenile delinquency for acts he had committed in the classroom. In the delinquency hearing, the boy was represented by counsel and adjudged "a person in need of supervision." While those proceedings were in process, the principal told the boy's mother that a "guidance conference" had been scheduled for the family. The mother called upon the attorney who was representing the boy and asked him for representation at the guidance conference. When the attorney notified the principal that he would attend the guidance conference, the principal said the attorney could not come because school board regulations excluded counsel from such conferences. The attorney appealed to a district court and obtained a temporary order restraining the principal from holding the conference. The court reasoned that since the ultimate result of the conference might be the child's loss of liberty, counsel should be permitted. The appeals court reversed the lower court's decision; it did not say that schools could do as they please with pupils, but reasoned that the guidance conference, by itself, could not deny liberty. There was no accusation, and the conference was not even quasi-judicial. The courts should not, said the appeals court decision, interfere with the ability of the schools to hold conferences and to enforce discipline.

Thus the court denied the guarantee of counsel to children in guidance conferences and other nonjudicial disciplinary hearings, but inferred that due-process guarantees might be invoked at other conferences that could lead directly to the loss of liberty.

Summary of Legal Procedures Affecting Mental Health Commitment of Children

A child seeking to invalidate commitment to a mental institution could contend that the action violated his civil rights because he had not been provided or allowed those constitutional rights available to persons facing loss of their liberty because of criminal charges. These include specification of charges, showing cause for the denial of freedom, trial by jury, and representation by counsel. Such rights would more probably be won by a child if his parents demanded them.

It is doubtful, however, that a case of this sort would be won by a child. Thus far, the rights guaranteed adults and juveniles accused of crimes have not been extended to adults who are charged with mental illness. It is unusual for children to obtain rights before they are extended to adults.

Of course, parents can protest the removal or confinement of their children, but the extent of the recourses available to children who face commitment as mentally ill is uncertain. What could a child placed in an institution for children at his parents' initiation, but against his own wishes, do

to contest his confinement? Could he obtain counsel and charge his parents and the institution director with conspiracy to deny his civil rights? When may a child initiate legal action to obtain his own rights, particularly when his conception of those rights conflicts with that of his parents'? Since most children confined as mentally ill are adolescents, the questions are realistic.

So far as I can determine, a child cannot take legal action on his own. Perhaps he could get the assistance of a relative, guardian, or mental health professional who could obtain counsel and bring suit on the child's behalf. But there has been no case or statutory law on the subject in recent years.

Currently, the child facing involuntary commitment has no capacity to challenge that commitment. And even his parents' right to do so is restricted and the procedural safeguards open to them are limited.

Civil Rights of Children Within Institutions

The laws of most States specify that institutions must be humane and that they prohibit punishment. But those familiar with institutions know that many things within the legal limits for the treatment of inmates can be done to harass and demean patients.

The kinds of rights issues that exist within institutions include isolation or seclusion of children, either in their own rooms or in special rooms; denial of participation in special activities, such as trips and visits outside the institutional confines; requirement that persons participate in activities, such as religious services, against their will; denial of visitors or communications by telephone or mail, or censorship of those communications; use, with institutional management's permission, of mechanical restraints; use of drugs as restraining or punitive devices; forcing people to eat food they do not want to eat; and denial of permission to wear clothes that inmates want to wear.

A variety of solutions is possible. One is good management. An institution that is well run by professionally oriented mental health specialists can insure that most of the rights of institutionalized children are protected.

Public regulatory agencies that license and supervise institutions can often control the violation of children's personal rights. Such organizations, however, can become so friendly with the institutions they are supposed to regulate that a child advocacy proposal might be necessary to insure that the regulators perform their mission.

Another protection for children's rights would be the operation of patients' councils, which could outline the norms for behavior and prescribe sanctions against those who violate them—within, of course, a framework of the normal constitutional guarantees. Unlimited self-government in institutions, as elsewhere, without protection of individual rights can be a cruel form of tyranny. Patients' councils should reflect the genuine interests and attitudes of the young people, rather than serving as devices to allow the inmates to enforce institutional regulations.

There are other issues that appear to be matters of rights. These include mixing child and adult patients on the same wards, the right to keep personal property, and the right to communicate by mail with persons outside the institution. Some States guarantee adult mental hospital patients rights such as sending sealed letters to attorneys and judges, keeping their harmless personal effects, and refusing surgery and other potentially dangerous medical procedures without the per-

mission of the patient or his family. However, the *rights* of children within institutions are often simply those that the institutions's management is willing to extend.

Strategies for Change

Complete reform of the law governing the civil rights of mentally ill children would require sweeping revisions of State statutes dealing with many areas. Laws governing the rights of children are found in legislation dealing with school attendance, public health, competency, and juvenile delinquency, as well as in State constitutions and in precedents set by dozens of court cases and volumes of administrative regulations that have the force of law. Revising such a body of law would require more resources than those concerned with children's rights could gather. Therefore, other strategies are necessary.

One device would be a genuine system of child advocacy throughout the United States. An authentic advocacy system would be similar to that of the Scandinavian ombudsman, an independent office charged with investigating citizen complaints against institutions and intervening at whatever level is necessary to eliminate legitimate grievances.

A child advocate would intervene on behalf of children, who would be informed of the advocate's existence and allowed to talk with him privately and immediately about any complaint regarding parental treatment, school policies, institutional practices, or court procedures.

Such advocates could take a variety of actions. They could counsel with the child, the family, school, or institution to achieve a satisfactory adjustment of a situation. They could, in institutional cases, call upon the services of the children's institutions licensing agency and insure that it corrected inequities, overcoming the too-often cozy relationships that develop between regulators and the regulated in American society. They could also help provide children with legal counsel when appropriate.

Other steps might be desirable. For example, children could be included on juries and commitment panels when a child's liberty is at stake. The decision of a jury can be voided when blacks or persons opposed to capital punishment are systematically excluded. Couldn't the liberty of children be protected in the same manner?

Perhaps society needs to protect children from themselves. Such a view, which is more easily rejected when applied to adults, may be reasonable when the health and safety of the young and inexperienced are in question. But such protection ought to be provided on an individualized basis. Children would have as many rights of citizenship as they can use responsibly. Instead of denying rights because of arbitrary indicators such as age, there should be individual decisions about individual children's rights. A just society can afford the time and resources to make such distinctions to protect the rights of its youngest and most vulnerable citizens.

Condensed with permission from *Child Welfare*, 52(1):14-25, 1973. Copyright 1973 by the Child Welfare League of America, Inc. Reprints of original article from Leon H. Ginsberg, Ph.D., Dean and Professor, School of Social Work, West Virginia University, Morgantown, W. Va. 26506

Social Dinners with Treatment Team

At Forest Hospital (Des Plaines, Illinois), three psychiatrists and their teams hold weekly therapy and social sessions for patients and their families. After a therapy session, the treatment team, patients, and families gather for dinner and socializing in the cafeteria or auditorium. In addition to the psychiatrist, a nurse, a social therapist, and an occupational therapist, a group can include from three to 20 patients and their families.

The therapy groups and the dinners afterward have increased the families' participation in hospital activities and have forced them to look at what is going on in their family life. When they learn what part they play in the overall family pathology, they often change their roles, making the patient's transition back home much smoother.

A major aim of the social functions is to teach the patients and families how to do things together. The staff's efforts are reinforced by examples set by those families who are accustomed to sharing activities.

Participation also makes relatives more familiar with the hospital, removing the mystery that seems to surround it.

Only rarely do families refuse to participate, and their resistance is often an indication of problems between them and the patient. Patients with unwilling families, as well as those without relatives, may attend the sessions, and they are often "adopted" by other families in the group.

Patients whose families do participate are pleased by their demonstration of interest and support, and respond well to treatment. The teams feel that the approach has been a positive contribution to therapy. (From an item by Cynthia Tiver, B.S.J., in *Hospital and Community Psychiatry,* 24(2):79, 1973)

USOE Urges More Programs for Education of Gifted Children

According to a recent report from the U.S. Office of Education Office of the Gifted and Talented, gifted schoolchildren too often are potential dropouts and discipline problems. Gifted youngsters sometimes are difficult to work with, being less willing to accept authority or follow regulations, and many times school personnel actually resent them; therefore, unusual ability can prove to be a barrier to achievement. Yet it is in the national interest to promote the development of superior abilities, for from the ranks of gifted children come individuals who may make extraordinary contributions to the sciences, the arts, and the professions.

Because the Federal budget is being curtailed, most programs for the gifted will have to originate at State and local levels. At the present time only 10 State departments of education employ a full time professional responsible for programs for the gifted and it is estimated that less than 4 percent of the nation's gifted and talented youngsters have access to special programs. In addition only 12 American universities offer graduate programs to train teachers in educating the gifted and talented.

Certain Federal efforts include strategies to raise the number and quality of programs for gifted children or to train more teachers for educating the gifted. The Office of the Gifted and Talented will conduct research to identify

gifted and talented persons in minority populations and among the handicapped, and the Office also has established a close working relationship with the Bureau of Adult Vocational and Technical Education to develop a variety of career education models for the gifted. The Emergency School Assistance Program designed to reduce racial isolation specifically includes the gifted children as eligible for remedial services, and funds from Title V of the 1965 Elementary and Secondary Education Act can be used to hire or train specialists to work with the gifted.

A $200,000 grant from the Office of the Gifted and Talented has been awarded to the Illinois State Department of Instruction to promote the training of professionals to work with the gifted.

In each of the U.S. Office of Education's 10 Regional Offices one staff member has been assigned part-time responsibility to coordinate State efforts of staff professionals, consultants, and volunteers with special interests in working with the gifted.

A national clearinghouse for information on the gifted and talented will be located at the Council for Exceptional Children, Arlington, Va. (From *Guidepost*, 15(8), January 12, 1973)

Drug Increases Slowed In 1972

The increase in drug use among high school students slowed down last year in a California county where trends in youthful drug usage have been carefully monitored over the past 5 years. According to a preliminary report for 1972 of a study conducted by the San Mateo Health and Welfare Department, the overall rise in illegal drug use in the county was no more than 1 percent, and some drug use actually decreased.

Annual surveys of drug use of 150,000 public, parochial, and private school students in this county are supported by the National Institute of Mental Health. The study represents the longest continuing collection of historical data in the nation on such a large scale concerning the spread of use of specific drugs through a student population.

The 1972 survey indicates that a large part of the use of illegal drugs by the young in the San Mateo schools was experimental. Occasional use was twice as common as heavy use.

Alcohol and tobacco continued for the fifth straight year to be the drugs students tried most often and were most likely to continue to use. Eighty-one percent used alcohol at least once during 1972, and 25 percent said they drank alcoholic beverages 50 or more times.

Following second-ranking tobacco, marihuana had the next highest rate of use, with just over half of the students reporting "any use" during the year, and 21 percent reporting they had used "fifty or more times." Marihuana rates showed almost no change over 1971, however, increasing only from 49.7 to 51.0 percent for "any use," and from 21.2 to 21.8 percent using "fifty or more times." This is in contrast to jumps of more than 6 percent between 1970 and 1971.

In the study, students report their own level of use of marihuana, amphetamines, barbiturates, heroin, alcohol, and tobacco on a survey form that is designed to ensure anonymity.

The 1972 survey showed low-use rates for LSD, amphetamines, and bar-

biturates among all of the high school students. Once again experimental use was higher than chronic use. In the case of barbiturates, there was a definite downward trend from 1971 to 1972 throughout all classes, sexes, and levels of use.

The percentage of students on heroin was also uniformly low, and less than a year earlier with 3.2 percent reporting they had used this opiate drug at least once in 1972, 1.2 percent 10 or more times, and 0.9 percent 50 or more times. The comparable rates for 1971 were 3.5, 1.6, and 1.1.

The study is being conducted by Mrs. Lillian Blackford, Health and Welfare Statistician in the San Mateo County Department of Health and Welfare.

Public Psychology

A program in Public Psychology has been started at John Hopkins University, with support from the NIMH. The program will provide work-training experience in public affairs to graduate students in psychology. The major experience is a one-year internship in an urban setting, with applied work in several fields: political behavior, communications media, design and utilization of space, law enforcement and justice, crisis intervention, public education, housing and community development, population control, and transit and traffic. Information about the program may be obtained from Dr. Stanley D. Imber, Director, Public Psychology Program, Johns Hopkins University School of Medicine, Phipps 424, Baltimore, Md. 21205. (From *Public Opinion Quarterly*, 26(4):633, Winter 1972-73)

Study On "Competency To Stand Trial" Reveals Misuse and Confusion

Too many Americans are being inaccurately judged incompetent to stand trial and are unnecessarily committed to mental hospitals, according to a 6-year study funded by the National Institute of Mental Health.

The study revealed that these people are not only being denied their right to a speedy trial, but have also been involuntarily committed to mental institutions for excessively long periods of time—an experience which often proves to be both stigmatizing and antitherapeutic.

The report notes that the common law criteria for competency to stand trial relate to three basic concerns: the defendant's understanding of the nature of the proceedings, his understanding of the consequences of the proceedings, and his ability to assist counsel in his own defense.

The researchers, members of the Laboratory of Community Psychiatry at Harvard Medical School, have attempted not only to clarify the numerous issues surrounding pretrial competency but have developed two tests which have been demonstrated to be effective screening instruments for determining competency. Appropriate use of these tests can help in preventing unnecessary admissions to mental hospitals in regard to this issue.

The research team also played an important role in the drafting of Massachusett's Mental Health Reform Act of 1970. This legislation has had a noticeable impact on that State's competency procedures. Based on statistics of the first 6 months under the new Act and projections for the first year, there will be about 1,000 fewer admissions annually to mental hospitals for competency examinations. Dr. A. Louis McGarry is principal investigator on the project.

recent nimh publications

Single copies of these publications may be obtained from the Public Inquiries Section, National Institute of Mental Health, Room 15C17, 5600 Fishers Lane, Rockville, Md. 20852. A complete list of all publications available from the NIMH may also be obtained from the Public Inquiries Section. If a price is given, the publication may be ordered in quantity from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Enclose a check or money order payable to the Superintendent of Documents.

Suicide Prevention in the 70's. This 109-page book reports on the 1970 Task Force comprised of 50 leaders in the field of suicide prevention, self-destructive behaviors, and dying and bereavement. Attention is given to the state of suicide prevention, education and training in suicidology, delivery of suicide and crisis intervention services, and establishing directions and priorities in the field for this decade. DHEW Publication No. (HSM) 72-9054.

Child Mental Health Core Library. A list of books and journals intended to provide guidance for building a current and relevant library on child mental health. DHEW Publication No. (HSM) 73-9010.

Selected References on the Abused and Battered Child. A reference list to be used for advancing the understanding of the psychological and social problem involved with the battered child. DHEW Publication No. (HSM) 73-9034.

Characteristics of NARA Patients in Aftercare During June, 1971. Examines the relationship of length of stay and rehabilitation of patients presently in the aftercare phase of the NARA program and the aftercare counselor's evaluation. An attempt is made to detect trends and differences in order to pursue additional studies. DHEW Publication No. (HSM) 73-9054.

Selected Characteristics of Residents in Alcoholism Halfway Houses. Statistical Note 76. Sex acceptance, ownership, bed size, length of stay, age, employment status, and location are compared for halfway houses serving alcoholic persons only with those facilities serving alcoholic persons and others. DHEW Publication No. (HSM) 73-9005.

Subscription Form for the Mental Health Digest

To: Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

Please enter my subscription to the Mental Health Digest.

$_____ is enclosed. (Check, money order, or Supt. Doc. coupons)

Please charge this order to my Deposit Account No. _____

Name _____
(please print or type)

Address _____

City, State, Zip _____

An annual subscription to the Mental Health Digest is $6.50. For foreign mailing, add $1.75. This additional fee is not required for Canada, Mexico, and Central and South American countries except for Argentina, Brazil, British Honduras, French Guiana, Guyana, and Surinam.

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION
NATIONAL INSTITUTE OF MENTAL HEALTH
5600 FISHERS LANE
ROCKVILLE, MARYLAND 20852

OFFICIAL BUSINESS
Penalty for private use, $300

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF H.E.W.
HEW 396

MHD AUG-73
UNIVERSITY MICROFILMS
JOY REED, SUPVR PERIODICALS
300 N ZEEB RD
ANN ARBOR MI 48106

DHEW Publication No. (HSM) 73-9001
Printed 1972

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Health Services and Mental Health Administration

National Institute of Mental Health